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**BOOTS IN THE AIR:  
MOVING THE NEW ARMY BRIGADE**

BY  
SCOTT F. SMITH

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THE SCHOOL OF ADVANCED AIRPOWER STUDIES  
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SCHOOL OF ADVANCED AIRPOWER STUDIES  
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## **Disclaimer**

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.

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## ***Abstract***

The perennial role of the Army in the armed forces has been to bring dominant combat power to bear in the form of firepower from heavy divisions. In post-Cold War engagements, the variable nature and increased frequency of conflicts warrant a review of how the Army is to perform its traditional role. Indeed, rapid arrival of a new type of combat power to a conflict may prove more necessary than traditional heavy forces. Army Chief of Staff General Eric Shinseki's "vision statement" of 26 October 1999 addressed this idea and introduced a future Army of lighter, leaner forces. Currently, experimental units known as Interim Brigade Combat Teams are moving toward operational readiness, with the objective being the capability to deploy anywhere in the world in 96 hours.

This study analyzes the new brigade and the capability for the Air Force to meet the associated airlift requirements. The author explores the value of such a unit for the United States armed forces and the potential airlift capacity in the coming decade to move the brigade in the desired time-frame. The conclusion is that the requirements exceed capability, both currently and for the immediate future. Next the author examines possible avenues to rectify the shortfall, including budget and force structure adjustments, in order to procure more airlift assets. The final section concludes that increased airlift is inextricably tied to brigade feasibility. Thus, without a joint approach to development, funding, and planning, deploying the brigade will remain only a vision.



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## **Chapter 1**

### **Introduction**

#### **Background**

The reality of the last decade is that the fundamental strategic picture has undergone radical change. Gone is the stabilizing existence of two superpowers exerting a suppressive influence on otherwise explosive regions of the world. To be sure, armed conflict occurred with some regularity during the forty-five years of the American and Soviet Cold War. However, there was also an implicit understanding by both Goliath's that nearly every encounter carried with it the potential to widen into a regional or even global engagement. This, it seems both nations comprehended, would spell a destructive end to which neither wished to arrive. With the demise of the Soviet Union and the subsequent multitude of emerging new states, such moderating influences have dissolved. America now finds herself in the midst of a volatile strategic picture, painted with a preponderance of regional conflicts. Moreover, America's baseline strategy of containment of communism has lost its relevance, leaving a directional void for those charged with defending new forms of national interest.

Enter the United States military into this setting of frequent conflict and ambiguous interests. Attempting to adjust to the new strategic realities, each branch of the armed forces has struggled to determine its particular relevance for operational employment in

the new environment. The challenge before the services is manifest, and their ultimate response in terms of mission and structural changes will largely determine each branch's influence as well as support for the next several decades. Significant resources, linked to new roles and missions, are at stake. Thus, questions of new roles and missions are of the utmost criticality for each service. Indeed, finding a unique or dominant contribution within overall force employment currently drives all of the services' self-promotion efforts. In this competition, the Army has fallen behind the other services. In the process, fundamental questions as to the desired nature of the land force have taken center stage.

## **The Vision**

Leading the evaluation is Army Chief of Staff General Eric Shinseki. Supported ardently by Army Secretary Louis Caldera, Shinseki revealed a new vision for the 21<sup>st</sup> Century Army. Only four months into his tenure as the Army's leader, Gen Shinseki testified before the Senate Armed Services Committee that he offered a "new direction." Distinctly aware of the insufficiencies of the current Army force composition, Shinseki declared that the Army "must be capable of executing the broader requirements of the National Security and National Military Strategies, to be responsive to the full spectrum of operations." To achieve this transition, Shinseki offered his goal of being able to deploy a combat brigade on the ground anywhere in the world within 96 hours after receipt of an order to execute liftoff. Moreover:

These forces will be light enough to deploy, lethal and survivable enough to fight and win, agile enough to transition from peacemaking to warfighting and back again, and versatile enough to enforce peace or fight wars. And they will be lean enough to sustain themselves, whatever the mission.

We will begin immediately to turn the entire Army into a full spectrum force that is strategically responsive and dominant at every point on the spectrum of operations.<sup>1</sup>

Among the more radical proposals associated with this transformation is the general's desire to replace the entire fleet of tracked vehicles, including the Abrams tanks, with wheeled systems. Additionally, Shinseki's vision includes erasing the distinction between light and heavy forces and turning every division into "an objective force...as soon as technology allows."<sup>2</sup>

## Significance

The ambitious plans for a new Army are already underway. Attempting to exploit what he deems a "window of opportunity" to become more strategically relevant, Gen Shinseki initiated the experimental transformation of the 2<sup>nd</sup> Infantry Division (heavy) at Ft. Lewis, Washington, with follow-on plans to transform the 1<sup>st</sup> Brigade, 25<sup>th</sup> Infantry Division (Light) into new, interim brigade combat teams (IBCT). With the addition of a third brigade (yet to be determined), the Army is working toward completing an operational division of the new "medium" force by 2001. As Shinseki declared, "We are going for capability, and not study."<sup>3</sup> Endorsing and broadening the implications of the vision for the Army and the United States Military as a whole, Secretary Caldera added:

We are committed to making the Army the force of choice for the nation, no matter what the mission is, no matter where in the world. We concede

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<sup>1</sup> Statement by General Eric K. Shinseki, Chief of Staff, United States Army, before the Committee on Armed Services, United States Senate, First Session, 106<sup>th</sup> Congress, 26 October 1999. [Record version].

<sup>2</sup> Sean D. Naylor. "Radical Changes: Gen Shinseki Unveils his 21<sup>st</sup>-Century Plans," *Army Times* (25 Oct 99), 8.

<sup>3</sup> "Shinseki Forsees a Faster, More Powerful Ground Force," *AUSA News*, vol 23 no 2 (Dec 1999), 1.

no mission to anyone, from initial entry to high intensity. If our soldiers are to be there for the long run, then they ought to be there on day one.<sup>4</sup>

Thus, while debate within the Army ensues about the potential success of such a “medium” division, the tremendous impetus generated by the Secretary and the Army Chief is making the IBCT force a reality.

The structural and doctrinal ramifications of these changes for the Army are manifest. Maj Gen Joseph Cosumano, assistant Deputy Chief of Staff for operations and plans for force development, succinctly stated the implications of the changes: “Everything is on the table in terms of relevance to the future Army.”<sup>5</sup> The perennial role of the Army in the armed forces has been to provide dominant combat power in the form of heavy divisions. “Winning the nation’s wars” has long been the moniker of the US Army, by “exercising direct, sustained, and comprehensive control over the land, its resources and its peoples.”<sup>6</sup> In the words of Gen Jones, Chief of Staff, United States Marines, “The Marines win battles, the Army wins wars.”<sup>7</sup> Yet the changing strategic environment calls for the development of new Army emphasis. Gen Shinseki highlighted this stating, “This business [joint capabilities] is about deterring, and then winning, if deterrence fails. It takes an Army to deter a war.”<sup>8</sup> Thus the primary focus of the Army may be subtly changing. The Chief is apparently committing new “interim” brigades to bring to a smaller-scale contingency (SSC) the relative dominant speed and firepower that heavy divisions currently offer for a major theater war (MTW). Moreover, Shinseki

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<sup>4</sup> Naylor, “Radical Changes,” 8.

<sup>5</sup> “Highlights of AUSA’s Annual Meeting,” *ARMY Magazine*, vol 49, no 12 (Dec 1999), 52.

<sup>6</sup> Joint Publication 3-33, *Joint Force Capabilities*, (13 Oct 99), II-2. (Also FM 100-5 *Army Operations*, 1993, 2-1).

<sup>7</sup> William L. Stearman, “Medium-Weight Brigades: Army’s Part of Joint Force,” *Army Times*, (6 Dec 99), 24.



intends to reorder joint employment in a SSC to place these “mediums” at the lead of deployment schedules.

Vice Chairman of the Joint Chiefs of Staff, Gen Joseph Ralston identified these changes as “both exciting and also critically important to get right.”<sup>9</sup> Indeed, the possibility for a new definition of “Joint Force Employment” potentially lies within a revision of the new Army force. Whereas the last decade has witnessed political favoritism for the use of airpower in contingencies, the next decade may see a return to more truly joint deployments. If the Army transformation effectively integrates with the maturing Expeditionary Air Force (EAF), a more effective, capable force may result. Reflecting the era of the American Expeditionary Force (AEF) of WWI, future contingencies may include boots as well as air in the initial stages of response—a new Joint American Expeditionary Force.

### **Research Questions**

The Army’s new vision requires commensurate alterations for the overall armed forces—particularly the Air Force. For by adjusting American military doctrine for SSC response, the Army vision presents immediate challenges for the logistical elements of deployment. Namely, beyond doctrinal questions of force employment, there is the ultimate challenge of making such force deployments a reality either through air or sealift. This thesis initially seeks to determine the need for Shinseki’s a “96-hour” brigade. Exploring the nature of American intervention, and new emphasis on coercive force employment, the author will paint a picture of the value added to United States

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<sup>8</sup> Ibid, 24.

forces, and thus to the effective support of the national military strategy. If the IBCT is indeed a desirable addition, then fundamental feasibility of moving the force inside of four days warrants evaluation. Ultimately, this thesis seeks to determine the lift requirements for achieving this goal, and how the armed forces might remedy any existing shortfalls. In short: do we need rapid, air-mobile medium brigades; do we have the lift required; and, if not, how might we get it?

### **Assumptions and Limitations**

This thesis makes the fundamental assumption that the Army will continue to move forward with its “medium” objective force. Given Gen Shinseki’s commitment to the transformation—speed of current implementation from combat trials to acquisition—the Army will undoubtedly reach a full division equivalent in the next two years. It is also assumed that there will not be dramatic changes to the Department of Defense budget, or a political turn to more isolationists American foreign policy. Either of these situations would have significant impact on the Army’s transformation as well as the logical exploration of this study. Notwithstanding the above concerns, an essential assumption for implementation of the answers offered in this study is that the Armed Forces transcend traditional parochial interests in the development of the most effective force. For if the American military is truly committed to objectively creating the most logical and effective fighting force for the challenges of the coming decades, it is incumbent upon each service to take action that reaches beyond bureaucratic entanglements and service rigidity.

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<sup>9</sup> “Ralston Applauds Army’s Efforts to Transform Force,” *AUSA News*, vol 23, no 3 (Jan 2000), 1.

Among the more significant limitations of this thesis is the focus on the mobile brigade. This study will not engage in an analysis of the entirety of Gen Shinseki's vision. That is, though the Chief's ultimate goal is five divisions in thirty days, the basic nature of the mobility question remains in the examination of the initial transformation—the IBCT. For if this first step cannot be taken, then those that follow are in doubt. Moreover, this thesis avoids intra-Army debates about wheeled versus tracked vehicles and conversion of all divisions to “medium” structure. These discussions remain inherently bound to Army expertise. Finally, as the Army is currently undergoing its transformation, there are intrinsic limitations on the availability of absolutely accurate figures on the new brigades' structure. Adjustments to the projected size and lift requirements may prove necessary for future discussion; however, the basic picture provided should offer an intelligent estimate of the deployment problem ahead.

## **Chapter 2**

### **Theoretical Setting**

#### **Introduction**

The 1997 National Defense Panel's (NDP) report to the Secretary of Defense delineated the U.S. military's principal role as an instrument of national security "to augment diplomatic, economic, and political efforts and protect against their failures." The report also outlined many developing challenges in the international community to which these American instruments of power might respond. Specifically, the NDP cautioned that geopolitical revolution; demographic and social pressures; increased global, interdependent markets; and technological revolution offered the possibility—indeed the high probability—of generating scenarios for armed conflict.<sup>10</sup> Given the overwhelming tempo of military operations over the last five years and the host of new international challenges ahead, it is sufficient to say that, at a minimum, American military "augmentation" will continue frequently in the future. The imperative is thus to develop the most effective force to meet such contingencies.

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<sup>10</sup> "Transforming Defense; National Security in the 21<sup>st</sup> Century." Report of the National Defense Panel, December 1997. Quotation is found on page 8, while the complete list of "Key Trends" is discussed pages 5-10.

## **New Environment**

There are indeed arrays of disturbing international signposts that will likely cause the United States to engage some aspect of its national power. In that respect, the world of the next few decades will not be unlike those since the end of the Cold War. However, even the potentially peace-enhancing aspects of the international community, such as interdependent markets, are inherently loaded with unknowns. These may prove increasingly beneficial, or may present a completely different set of strategic challenges for American interests than those of the past.

Richard Haass referred to these changes as “international deregulation,” in which “the effects of the change are anything but uniform,” resulting in a world that is less stable, abounding with “smaller but still highly destructive conflicts within, between, and among states that are more common than before.” Ultimately, Haass suggests that for international stability, the United States must continue to develop its ability to persuade others to adopt and abide by its preferences, while subsequently insisting on them when resistance emerges.<sup>11</sup> Yet, how does America achieve this persuasion (in a military setting with limited aims) in an era where national interests are not only difficult to define, but also not necessarily the only reasons she acts?<sup>12</sup> The answer may be found in a re-examination of established theories of coercion.

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<sup>11</sup> Richard N. Haass. The Reluctant Sheriff: The United States After the Cold War, (New York: Council on Foreign Relations, 1997) 25. See also 27-44 in which Haass explores the primary “deregulation” currents.

<sup>12</sup> For example, the December 1999 edition of the National Security Strategy includes the third category of national interests as “humanitarian and other interests.” This includes acting “because our values demand it” in some circumstances. This ambiguity resonates through much of the document, indicative of the complex and sometimes arbitrary American engagements.

## Coercion--Definition

In his seminal work *Arms and Influence*, Thomas Schelling argued that coercion was inextricably linked to the psychological side of warfare. He asserted that military “hurting” is most effective for its indirect message—its signal to an enemy. Coercion thus depends “more on the threat of what is yet to come than on damage already done.”<sup>13</sup> Alexander George adds that the general intent of coercive diplomacy “is to back a demand on an adversary with a threat of punishment for non compliance that will be credible and potent enough for him to persuade him that it is in his interest to comply with the demand.”<sup>14</sup> Additionally, Glenn Snyder asserts that the key to deterring an enemy is ensuring that he understands that the costs of continuing with his objectives outweigh the possible gain(s).<sup>15</sup>

Another critical element for successful coercion is that of credibility. As a recent observer noted, “deterrence by punishment will only be effective if an aggressor believes the threat will actually be carried out.”<sup>16</sup> Not only is this relevant for the current conflict, but perhaps more importantly for others in the future. That is, every military action a nation takes addresses an audience far beyond the immediate adversary. As Richard Haass observed, “walking away” or deciding not to use force in a limited conflict

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<sup>13</sup> Thomas C. Schelling. *Arms and Influence*, (New Haven: Yale University Press, 1966) 172. This is only a “soundbite” of Schelling’s work (similar to theorists that follow). The intent, however is to draw recognized elements of coercive theory into a modern application in a new era of international challenges—some theoretical aspects remain true, others require new adaptation.

<sup>14</sup> Alexander L. George. *Limits of Coercive Diplomacy*, Second Edition (Boulder: Westview, 1994), 2. George identifies the demands including stopping short (of an aim); undoing an action; or making governmental changes.

<sup>15</sup> Glenn H. Snyder. *Deterrence and Defense: Toward a Theory of National Security*, (Princeton: Princeton University Press, 1961), 3-5.

conveys significant signals that “perseverance and escalation will pay.” The extent and credibility of commitment thus resonates and likely affects other possible adversaries’ impression of American resolve.<sup>17</sup>

Thus, established theories of coercion, though largely originating in the Cold War, maintain relevance in the dramatically changing international environment of today. However, because the nature of adversaries remains varied and even unclear for future decades, coercive theory requires new additions. Namely, as conflicts multiply with often nebulous American interests at risk, coercion theory of inter-state confrontation may prove insufficient. The military arm of national power will thus likely find employment more frequently, as other forms of statecraft prove inapplicable or insufficient in dealing with intra-state engagements. Yet adhering to the fundamental precept of credibly raising the military costs for an adversary (through new employment philosophy) may well prove sufficient to reach American objectives.

### **Doctrinal Engagement**

In the last two decades, the United States has experienced an evolving military doctrine in concert with shifting national interests. In 1984, then Secretary of Defense Caspar Weinberger articulated six conditions for American commitment of forces abroad. These were a combination of whether to use force and, if used, how to employ it. Essentially, the Weinberger doctrine focused on the need for vital interests to be at risk

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<sup>16</sup>John Harvey. *Conventional Deterrence and National Security*, (Canberra: RAAF Air Power Studies Centre, 1997), 14-16.

<sup>17</sup>Richard N. Haass. *Intervention: The use of American Military Force in the Post-Cold War*, (Washington, D.C.: Carnegie Endowment for International Peace, 1994), 81. Haass cites examples including the US withdrawing from Beirut in 1984 as “almost certainly” influencing Saddam Hussein’s thinking six years later.

and, if such a condition existed, the use of resolutely employing overwhelming force to achieve victory. Following the Gulf War, Chairman of the Joint Chiefs of Staff Colin Powell addressed the importance of setting clearly defined and understood political objectives. He further warned that it was dangerous and imprudent to keep employment limited rather than using overwhelming force to achieve a specific outcome. Moreover, prior to force employment, Powell advocated a thorough examination of all the subsequent probable developments in the conflict.

At the same time, President Bush argued against using interests as an absolute guide. His was a more open interpretation of military employment in that the stakes for each conflict had to be weighed with the resultant determination possibly warranting military force despite no “vital” interests at risk. Later, but before becoming Secretary of Defense, Congressman Les Aspin took issue with what he considered the ‘all or nothing’ approach of Gen Powell, insisting that it unnecessarily limited the use of the military for foreign policy purposes. Instead, he advocated a policy that supported more expansive use of military force for political purposes—a policy that, despite rather dramatic setbacks such as in Somalia, has nonetheless continued throughout President Clinton’s terms of office.<sup>18</sup> The net result of this shift of engagement doctrine has been that America’s emphasis on “engagement, prevention and partnership means that...US military forces are more likely to be involved in operations short of declared, intense warfare.”<sup>19</sup>

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<sup>18</sup> Haass, Intervention, 14-17. The summations of the above text are taken not only from Haass’ evaluation, but from his Appendices which include all of the aforementioned “doctrines.”

<sup>19</sup> Les Aspin. *Report on the Bottom-Up Review* (Washington: Department of Defense, Oct 1993), 8.



## Intellectual Rigidity

Thus far, this chapter has provided the basic nature of a changed international system, the fundamentals of coercive interaction within that environment, and the evolved proclivity of America increasingly to engage with military force abroad. The question remains as to whether the services—specifically for this examination, the Army—are capable of meeting these new challenges through their own analysis and adjustment of their strategy and force structure.

Recent conflicts have highlighted the fact that the basic Army adjustments to the post-Cold War environment have been deficient. Not even Desert Storm, with its example of preponderant land power, is free of criticism—chiefly the huge effort and considerable time required to assemble and move forces in place. This inability to adjust has allowed the Air Force to become, in the eyes of many, the force of first choice.<sup>20</sup> One observer described this new primacy as the result of the leadership embracing airpower not as a “joint” complement to surface forces, “but rather as a substitute for ground power.”<sup>21</sup> One of the primary reasons for this substitution, the author continues, has been the Army’s intellectual and structural inadequacy in the post-Cold War international security environment

What has been the cause, then, of this rigidity in Army intellectual development?

Exploring the military thought process in the development of strategy, Rear Admiral J.C.

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<sup>20</sup> To be sure, most of the practical choice of the type of military force by the government is reflective of a desire to limit casualties and cater to popular opinion (even the military’s own preference). However, even had land forces been desired either earlier—or at all—in the conflicts, the Army lacked the appropriate force structure to allow swift deployment and logistical reduction.

<sup>21</sup> Jeffrey Record. “Operation Allied Force: Yet Another Wake-Up Call for the Army?” *Parameters*, Winter 1999-2000, 15.

Wylie believed the Army's problem lay in a fundamentally different approach to global concepts than the other services. In his analysis, Wylie offered a definition of strategy that included two basic variations for war:

A plan of action designed in order to achieve some end; a purpose together with a system of measures for its accomplishment.

There are actually two very different kinds of strategies that may be used in war. One is the sequential, the series of visible, discrete steps, each dependent on the one that preceded it. The other is the cumulative, the less perceptible minute accumulation of little items piling one on top of the other until at some unknown point the mass of accumulated actions may be large enough to be critical.<sup>22</sup>

Thus, on the one hand there is the essence of Henri de Jomini, with a force moving from one decisive point to the next. On the other, there is a mass of different approaches, each contributing in some undefined way to the cumulative result.

Wylie contends that unlike the airman or sailor, the soldier's view is not worldly, but rather focuses on theaters, campaigns and battles—sequential. A terrain-centric outlook and the proximity and duration of his battlefield contact thus intellectually hamper him. Moreover, nearly every iteration of Field Manual 100-5 has stressed the “ultimate objective” of all military operations is the “destruction of the enemy's armed forces and his will to fight.”<sup>23</sup> This last aspect may be of doubtful relevance for many future conflicts. Indeed, the recent Kosovo campaign evidenced the latest evolution of bombing sophistication, wherein higher emphasis was placed on non-fielded forces for targets. Thus, the Army apparently maintains doctrinal affinity for conventional, force-on-force engagements in the face of changing conflict scenarios. Ultimately, Wylie argues that

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<sup>22</sup> J.C. Wylie, RADM, USN. *Military Strategy: A General Theory of Power Control*, (Annapolis: Naval Institute Press, 1967) 14 and 24, respectively.

<sup>23</sup> Ibid, 44. Wylie offers a comprehensive examination of the soldier's perspective on 42-48.

this inability of the soldier to think strategically and globally hampers the overall effectiveness of the military. He contends that this land-force orientation challenges the more important problem of “how the composite military mind can best make up its mind.”<sup>24</sup> Or, in today’s lexicon, how can the services collectively exercise a “joint” philosophy in their approach to strategy and war.

This intellectual challenge is a critical hurdle for joint planning and for the Army’s own force structure. Wylie states that despite these evolving challenges to strategy, the “ultimate determinant in war is the man on the scene with the gun.” Significantly, however, he qualifies his point by adding “I do not claim that the soldier actually on the scene is a requisite in every case; but I do believe he must be potentially available, and clearly seen as potentially available, for use as the ultimate arbiter.”<sup>25</sup> In fact, the *threat* of destruction can often prove as important as the actual prosecution of a war. As such, the Army must be able to evaluate its potential as well as its actual employment in its approach to overall military contribution. Or, as Harry Yarger offers, “the Army partisans must understand what colors their lens green to ensure that land power continues to serve the nation most appropriately.” The relevant question at the Army level, he continues, is if the ingrained doctrine of overwhelming force—in traditional terms—and necessary political resolution for its use will exist or are even preferable in the next epoch.<sup>26</sup>

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<sup>24</sup> Ibid, 48.

<sup>25</sup> Ibid, 72.

<sup>26</sup> Harry R. Yarger, Col, USA, [Ret.]. “*Land Power: Looking Toward the Future through the Green Lens*,” *Strategic Review* (Winter 1999) 28. Yarger’s “lens” reflects Wylie’s theories on how each service views its role in conflict.

## Precedent for Today's Change

Despite these deeply rooted instincts, the Army has witnessed advancement of strategic thought beyond its traditional intellectual rigidity. In fact, the last twenty years reveal a slow, but steady evolution toward the more global advocacy of Gen Shinseki's "vision." Indeed as early as 1981, the Army began to realize "that its mechanized and infantry formations were either too heavy or too protected and therefore not mobile enough to withstand the rigors of the future battlefield."<sup>27</sup> To meet the need, the Army created the High Technology Light Division (HTLD) that reached operability in 1985.

Like Shinseki's new experimental brigades, the HTLD was developed at Ft. Lewis, Washington, where the project sought to combine the tactical mobility, firepower, and survivability of a heavy division with the airlift sustainability required of a light division. The ultimate goal was a force that could execute worldwide contingency missions while retaining significant utility on the European battlefield. Also reflective of today's Army "vision" was the fact that in the process of development, the HTLD engaged commercial industry to meet developing needs. Thus, tests and acquisition of revolutionary equipment were achieved by "shortcutting the jungle of red tape." The motto of the HTLD "skunk works" is thus not surprisingly different from Shinseki's "capabilities not study"—"Go ahead and do it."

Despite this tremendous progress toward advancing capabilities and subsequent doctrine, the Army HTLD effort never reached the breadth of effect that its originator, Gen E.C. Meyer, envisioned. As Gen Donn Starry ominously wrote in 1983:

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<sup>27</sup> Tamir Eshel. "The US Army's New Light Division," *Defence Update International* (No 47, 1984) 15. The complete essay is in two parts, with part two in Issue No 50, 1984.

We may have analyzed the process, framed its essential parameters, and made some considerable progress toward arming ourselves with systematic mechanisms to permit change to take place. But that in no way ensures that change will occur or that it will be an easy, orderly process.<sup>28</sup>

Indeed, though moderately successful in reaching its objectives, the HTLD in the words of one Army officer “just fizzled out.” In reality, technological difficulties in reaching a reduced logistical “tail” as well as delays in the selection of appropriate vehicles continued to delay the 9th ID, HTLD until the concept was absorbed by follow-on concepts. However, the HTLD was a critical move forward for the Army, and the concepts for employment garnered significant intellectual support among the service’s leadership.<sup>29</sup>

Another major milestone in Army intellectual evolution was Gen Gordon R. Sullivan’s Force XXI. Begun in the mid 1990s, Force XXI was conceptualized as a “mind-set and an orientation, rather than an end product of the present process of change.” It was to have the strategic objective of transforming the Army into one that achieved “maximum versatility in today’s ambiguous environment...tailorable to be effective against any threat, in any environment.”<sup>30</sup> The proposal included further advancements from the HTLD, including the possibility of active divisions moving away from their fixed configuration and tailoring through “mix and match” of combat support and combat service support units.

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<sup>28</sup> Donn A. Starry, Gen, USA. “To Change an Army,” *Military Review* (Vol 63, No 3, March 1983) 27.

<sup>29</sup> See “The Light Division: Light Enough to Get There-Mobile Enough to Survive-Lethal Enough to Win-We Need it Now,” *Armed Forces Journal International*, October 1983. Also “Light Armor: Necessary Addition to the Light Infantry Division,” *Armed Forces Journal International*, November, 1984.

<sup>30</sup> Gordon R. Sullivan, Gen, USA. “A Vision for the Future,” *Military Review* (May-Jun 1995) 8 and 6, respectively.

Moreover, heavy investment and reliance on emerging technologies were at the heart of Force XXI. Leveraging the information systems that were becoming available was to give the objective force unique capabilities for dominance in the emerging battlefields. The 4<sup>th</sup> ID (Mechanized) thus became the Army's Experimental Force (EXFOR) with the additional designation as the First Digital Division (FDD). Though organized much like then-current heavy divisions, 4 ID(M) would be twenty-four percent smaller in combat arms platforms and included some 2,000 fewer soldiers. The goal was to integrate information operations and systems effectively so as to reduce the size of the division markedly while simultaneously significantly increasing its area of combat coverage.<sup>31</sup>

To the still developing Force XXI, the next Army Chief, Gen Dennis Reimer, added expanded philosophical development. Again emphasizing the need for more strategic responsiveness, Reimer articulated "spiral development." This he described as a "partnership" of soldiers, scientists, testing agencies, industry, academe and the research and development community working in concert on experimentation. This was the culmination of Reimer's advocacy for a more "mentally and physically agile" Army.<sup>32</sup> For the "physical" side of agility, Reimer added a "Strike Force." This was essentially identical to Gen Shinseki's IBCT, as it was to be deployable to any location in the world within ninety-six hours. Again stressing an "information-system infrastructure" this

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<sup>31</sup> Mark Newell, Maj, USA. "4<sup>th</sup> ID Pioneers New Division Design," *ARMOR* (Vol 102 No 6, Nov-Dec 1998) 49.

<sup>32</sup> Dennis J. Reimer, Gen, USA. "The Army After Next: Revolutionary Transformation," *Strategic Review*, (Spring 1999) 42.

“Strike Force” would be a concurrent development to the ongoing digitization of the force.<sup>33</sup>

Finally, in the summer of 1999, Gen Shinseki took the Army’s top spot. In the pattern of his predecessors, Shinseki announced further developments for the developing “Army After Next.” Some eighteen years after the original concepts of a more agile, threat-responsive and versatile force were begun, the Army continues to be partially entrenched in the intellectual cage of traditional thought. Hesitancy and resistance mark the bureaucratic entanglements of the transformation. For example, in the 1997 Army After Next report, an Army panel cautioned that changing too quickly would likely result in the acquisition of “immature or inappropriate capabilities” thus “undermining the doctrinal organization or cohesion.”<sup>34</sup> Mirroring comments of the last twenty years, Deputy Secretary of Defense John Hamre summed the progress of Army development: “It cannot simply be what it was and think that it is going to be relevant for this new complex world that is emerging.”<sup>35</sup> The last three Chiefs have recognized this fact, the intellectual environment has begun to adapt, now Gen Shinseki is trying to complete the twenty-year transformation towards new strategic relevance.

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<sup>33</sup> Jason Sherman. “Quick Time: The Army’s New Strike Force Concept Aims to Redefine Rapid Reaction,” *Armed Forces Journal International* (May 1999) 16-17.

<sup>34</sup> “Knowledge and Speed,” Annual Report of the Army After Next Project (Ft. Monroe, VA: US Army Training and Doctrine Command, July 1997) 5.

<sup>35</sup> Jason Sherman. “The Vision Thing: The Army Leadership Has Promised a New Vision. But Will It be Able to Generate More Resources?” *Armed Forces Journal international* (Oct 1999) 44.

## Counterfactual Considerations

### Desert Storm

Maj Gen Robert Scales, Jr. recently opined that if as a nation we are to win “quickly and at minimum cost” we must arrive early in a conflict “hopefully early enough to interfere with the deployment scheme of the enemy.” This, he points out is a capability that we did not have at the outbreak of the Gulf War, “nor do we yet have maneuver forces able to arrive quickly and fight enemy main force units decisively.”<sup>36</sup> Though it is hindsight, it is nonetheless instructional to examine the natural implication of such a query—what if we had?

One of the clearest advantages lost in the prelude to the Gulf War occurred prior to the Iraqi invasion of Kuwait. Maj Gen Scales conjectures as to the opportunity to end the Gulf War more quickly and painlessly had America possessed the forces capable of interjecting themselves between the Iraqi Republican Guard and northern Kuwait. Though intelligence and political shortcomings caused a failure to read the magnitude of the Iraqi threat, even had she been on top of the force deployments, America had no viable force with which to intercede. If, on the other hand, Shinseki’s medium brigades were a reality at the time, they may well have been able to halt or otherwise disrupt the southern movement of Iraqi forces. As a minimum, together with increasing air assets a force of 2-4 brigades could have prevented the entire occupation of Kuwait.<sup>37</sup> Thus, the

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<sup>36</sup> Robert H. Scales, Jr., Maj Gen, USA. “A Sword With Two Edges: Maneuver in 21<sup>st</sup> Century Warfare” *Strategic Review* (Spring 1999) 50.

<sup>37</sup> The presence of fast, hard-hitting brigades may well have caused enough disruption to thwart the complete conquering of Kuwait. At the time, however, the US could only deploy light infantry divisions in an appropriate time frame. Of course, the ultimate progress of the “vision”—5-day deployable divisions, would provide even more



nature of the threat to Saudi Arabia and the Gulf States would have been lessened and the ultimate time to eject Iraqi forces would have been reduced.

Even earlier in the conflict, better intelligence might have provided sufficient time to allow the national command authorities to implement heightened diplomatic and/or military signals to Iraq. Conceptually, a 1994 Rand report suggests that failing deterrence by these measures, the “next level” of deployment might achieve the dissuading objective. For purposes of this examination, such a level might well have been reached with potent medium brigades.<sup>38</sup> As the situation evolved, Iraq was able to take advantage of the immobility of American forces and political hesitation and succeeded in conquering all of Kuwait. Though the American response was swift by historical standards, it was nonetheless dilatory—a hard military lesson in this first major post-Cold War conflict.<sup>39</sup> Thus, despite the eventual overwhelming allied victory, it is indeed possible that had more rapid, lethal forces existed, the victory might ultimately have required less time, resources and lives from America and her allies.

## **Kosovo**

If the Gulf War was more reflective of a Cold War era environment in that heavy forces arrayed for head-on engagement, Kosovo offers a picture more indicative of the

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probable, successful defense. Nonetheless, a few brigades could have served to frustrate Iraqi momentum.

<sup>38</sup> Paul K. Davis, ed. *New Challenges for Defense Planning: Rethinking How Much is Enough*. (Rand, 1994) 356.

<sup>39</sup> The order for land force deployment was issued on 7 Aug 1990. Six days later, most of the 82d Airborne’s first ready brigade had arrived, and within two more days, 18 m-551s and 15 AH-64s were also on hand. On 19 Aug, elements of the 101<sup>st</sup> arrived and on the 27<sup>th</sup>, the first elements of the 24 ID (Mech) reached the theater. None of these units were complete, nor were there sufficient C2 units in theater. Thus, for the first 20 days following the deployment order, light, piecemeal units were the only significant Army

challenge of the new strategic environment. John Mearsheimer explains that, given an engagement with limited aims (i.e. less than complete destruction or subjugation of another state), the key to success is the achievement of “strategic surprise.”<sup>40</sup> Haass expands on this idea, warning “the passage of time may mean the loss of surprise and the loss of initiative, while giving the adversary opportunity to prepare militarily and politically for the battle to come.”<sup>41</sup> This may be the one most remarkable current capabilities of the United States military—covering the globe within twenty-four hours through airpower. Yet has America maximized her potential for surprise with the fullest coercive effect?

The answer is, apparently no. Although significant political limitations controlled the level and pace of the conflict, the fundamental opportunity for force employment was warranted. On a number of levels, this conflict offered ideal opportunity for the use of the IBCT. First, the primary interest declared by NATO was that the Serb aggression “directly threatened peace throughout the Balkans and the stability of southeastern Europe.”<sup>42</sup> There is a twofold implication with this statement. On the one hand, there was the threat that the Serb forces might not remain confined to actions in Kosovo. If this was the concern, then the paltry five hundred troops arrayed in Macedonia as observers hardly constituted a viable opposition force. Here was the first possibility for IBCT employment. Not only would it have been sufficient (again, with air superiority) to

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units available to the CINC. For a complete timeline of deployment, see the *Conduct of the Persian Gulf War*, Final Report to Congress (April 1992) sec. E.

<sup>40</sup> John J. Mearsheimer. *Conventional Deterrence*, (Ithaca: Cornell University Press, 1983), 53.

<sup>41</sup> Haass, *Intervention*, 89.

<sup>42</sup> “Kosovo/Operation Allied Force After-Action Report,” Report to Congress (31 Jan 2000) 3.

halt Serb advances, but it also would have created a barrier to sympathetic allied forces that may have decided to engage on behalf of Kosovo—the other implicit danger for NATO interests.

The second value of the brigades for the conflict lay in credibility. The “After-Action” Report to Congress indicates that Milosevic’s conduct leading up to Operation Allied Force “directly challenged the credibility of NATO.”<sup>43</sup> Regardless of the validity of that observation, the initial reticence of NATO members for ground forces (US included), followed by “glacier-paced” deployments of Army units, likely did more to damage NATO credibility than any of Milosevic’s actions. The fact that no ground threat existed until the final stages of the conflict undoubtedly afforded Milosevic the opportunity to mitigate the damage of the air strikes—both politically and militarily. Maj Gen Scales compares the situation to the Vietnam experience;

The Vietnamese realized that overwhelming firepower alone could never compensate for the presence of an aggressive force on the ground to find, fix and fight them in close combat. Without a ground threat, they merely had to array their forces in order to endure punishment by fire alone.<sup>44</sup>

Another possibility for the Kosovo conflict considers the eventual necessity for a ground campaign. Given that Serb forces were compelled by air strikes to hide throughout much of the campaign, the ultimate advance of land forces would have best succeeded with a highly maneuverable unit. This is not advocacy for the IBCT to engage without heavy support. Rather, it raises the intriguing consideration that the brigade would have had the potential to move quickly in some areas to operate between lines of communication, thus offering Serb forces the *fait accompli* of an untenable position. Moreover, the brigade

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<sup>43</sup> Ibid, 4.

either could have been airlifted or maneuvered itself deep behind Serbian positions and formed a blocking force for any retreating units. The tactical situation would have been amenable to such penetration, as Serb forces were not sufficient to cover the entire territory, nor were their concealment tactics conducive to forming quickly to engage an advancing force.

Finally, in Kosovo (as well as in the Gulf example) the new brigades would have offered a unique capability for mission transfer. That is, at the conclusion of hostilities, there is an inevitable post-conflict presence required. As of this writing, such a force exists not only in Kosovo, but also in nearly every other site of American engagement over the last ten years. IBCTs, trained and equipped for a multitude of missions, would have been the ideal initial force to occupy secured territories. Unlike their predecessor units, the brigades would have offered the appropriate vehicles and personnel for peacekeeping or peace enhancement operations. Not only would these lighter forces have offered logistical advantages but also familiarity with doctrinal employment commensurate with the post-warfare requirements..

## **Summary**

The above counter-factual presentations are by no means exhaustive, and thus not completely conclusive. Not only were many other employment uses possible, but the overall contexts—politically, operationally, etc.—were infinitely more complex than described. However such in-depth considerations exceed the parameters of this examination. Notwithstanding these limitations, it is apparent that had America

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<sup>44</sup> Robert H. Scales, Jr., “From Korea to Kosovo: America’s Army Learns to Fight Limited Wars in the Age of Precision Strikes” *Armed Forces Journal International* (Dec

possessed the lighter forces of Gen Shinseki's vision in each of these encounters, the options available to the respective CINCs would have been manifold.

## **Conclusion**

According to most assessments, the world of the next two decades will look similar to the world of today. Although there will remain the prospect of regional warfare on the upper end of the conflict spectrum, the probability seems much higher that most of the military engagements of the near term will occur at the lower end of the spectrum. Reduction of sovereignty through non-governmental organizations, increasing economic interdependence as well as ethnic and nationalistic friction will undoubtedly give rise to significant armed episodes. In addressing this volatile environment, the most fundamental military inquiry is "how to win." Alan Zimm suggests that this question is made difficult for the forces to answer due to "cause and effect modeling." For the military, this translates into warfighters having a set of learned moves "that they have learned to link with victory."<sup>45</sup> As the Army focuses on overwhelming combat power, and finding and fixing the opponent, the Air Force concentrates on core competencies and an exposition of capabilities. Thus, the two approach the question of "winning" with differing views of cause and effect.

However, the complexity of the new era actually offers an opportunity for the services to bridge the intellectual gap that apparently separates them from a truly unified approach to conflict. The nature of warfare is indeed evolving, and it is unclear at this point what the ultimate needs of the military will be. In the interim, there seems to be

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1999) 37.

growing intellectual consensus—both among Army observers and the military as a whole—that a medium force is a noble and worthwhile goal. Pursuant to this development, the Army and the Air Force have the potential to connect intellectually, thus negating the preventive biases of tradition. The National Defense Panel concluded that land forces need to become “more expeditionary: fast shock-exploiting forces” with “lighter, greater range, more lethal fire-support systems” and new armor more reliant on “speed and agility.”<sup>46</sup> In short, this is an endorsement of the Shinseki Army vision. The next step might be to foster the “natural marriage” Gen Reimer sees between such Army forces and the maturing Expeditionary Air Force. This doctrinal evolution might then allow the military to reach its full capability for force projection and execution of national policy.

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<sup>45</sup> Alan D. Zimm. “Desert Storm, Kosovo, and “Doctrinal Schizophrenia,” *Strategic Review* (Winter 2000) 36.

<sup>46</sup> National Defense Panel Report, 47.

## Chapter 3

### Clarifying the Vision

*Where there is no vision, the people perish*

Proverbs, 29:18

*But the bravest are surely those who have the clearest vision of what is before them, glory and danger alike, and yet notwithstanding go out to meet it.*

Thucydides

### IBCT—Strategic Concept

Though the changing environment of warfare was discussed in the previous chapter, specific exploration of the threats demands further review. In 1994, a group of RAND analysts identified the possible areas in which an enemy might manipulate future warfare. These included such concepts as deployment into hostile environments that lack substantial host-nation support, such as secure ports and fields; nonlinear battle tactics with the objective of close contact with ground forces to frustrate targeting; and engagement in urban or enclosed terrain. These approaches to warfare in sum carry the objective of “seeking ‘operational events’ in which U.S. failures to achieve objectives or the costs it paid led to a change in the operational approach” (such as abandonment of airfields or parts of the operating environment).<sup>47</sup>

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<sup>47</sup> Bruce W. Bennett, Sam Gardiner, and Daniel B. Fox. “Not Merely Planning for the Last War,” Chapter 15 of New Challenges for Defense Planning: Rethinking How Much is Enough, Paul K. Davis, ed. (Santa Monica, CA: RAND, 1994), 497-498.

Based upon a similar collection of threats, the 1997 National Defense Panel (NDP) identified critical needs for future military forces. One of these needs was the “ability to move our forces rapidly and in the right configuration” wherein “the greater their mobility, the greater their protection.” A second requirement was speed, or “the rate at which we can mobilize, deploy, set, act and reset for any action—preemptive or reactive,” as “fundamental to success.” Other needs recommended were increased operational and strike ranges and smaller logistics footprints.<sup>48</sup> All of these concepts thus set crucial parameters for any future ground force structure.

Though the aforementioned ideas are not new to warfare, they nonetheless assume new forms and warrant conceptual strategic changes for battlefields with modern technology. Responding to this modernization of warfare, the USJFCOM concepts division is undergoing experimentation with “Rapid Decisive Operations” (RDO). Reflecting the observations of RAND and the NDP, RDO embraces “simultaneity” which “describes how the Joint Force Commander can undertake operations immediately to strike at the heart of the enemy’s vulnerabilities and most dangerous capabilities to achieve rapid, strategic success.”<sup>49</sup> At the heart of the RDO lies increased operational reach through “longer-range weapons and systems, more efficient logistics, and smaller but more lethal combat units.”<sup>50</sup>

## **IBCT Mission**

As the following chapter will reveal, most if not all of these ideas and experiments are encapsulated in the IBCT development. However, at the time of this writing, specific details

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<sup>48</sup> *Transforming Defense: National Security in the 21<sup>st</sup> Century*, Report of the National Defense Panel, December 1997, 45.

<sup>49</sup> “A Concept Framework for RDO,” USJFCOM, J-9, White Paper, 22 October 1999, 3.



about the composition of the interim brigade combat team are only slowly evolving. Significantly clearer at this early stage is the conceptual combat role for the IBCT. Recently, retired Army Colonel Robert Killebrew argued that warfare in the 21<sup>st</sup> century will be conducted “by flexible task forces rather than fixed formations.” Moreover, Col Killebrew suggested the armor-infantry balance warranted a shift toward infantry because the Army’s near-term challenges “are most likely to come in Kosovo-like settings that are more soldier-intensive than equipment-intensive.”<sup>51</sup> Echoing this opinion, acting director of battle lab integration technology and concepts at the U.S. Army Training and Doctrine Command (TRADOC) Col Mike Mehaffey stated that analysis for the IBCT development began with the base case of Serbia because “this complementary force is being optimized for that type of combat action or small-scale contingency (SSC).” Thus, this force, while also being developed as a “welcome partner” for major theater war requirements, has two fundamental objectives: 1) arrive at the battlefield quickly and 2) “through immediate execution of decisive action” influence the outcome in terms of National Command Authority objectives.<sup>52</sup>

The initial Organizational and Operational Concept (O & O) for the brigade is instructive for comprehending the Army’s explicit employment objective: “Early Dominant Response in Small Scale Contingencies.” Elaborated, this rapid response force is deemed capable of deterring action, reducing risk, constraining enemy options, and facilitating rapid decisions.<sup>53</sup> Reflecting the objectives of Gen Shinseki’s “vision,” the O & O contends that “Army options available to

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<sup>50</sup> Ibid, 12. “Operational Reach” is defined as “the distance over which military power can be concentrated and employed decisively.” Joint Publication 3-0, III-16.

<sup>51</sup> Robert B. Killebrew, Col, USA, Ret. “The Army of the 21<sup>st</sup> Century,” *ARMY*, January 2000 (vol 50, no. 1) 12. Col Killebrew’s reference is to the 1999 Operation ALLIED FORCE for the relief of Serbian aggression in Kosovo.

<sup>52</sup> Scott R. Gourley. “New Brigade Structure Begins to Emerge,” *ARMY*, February 2000 (vol 50, no. 2) 33.

warfighting CINCs for joint contingency response are too limited,” thus the sequential deployment pattern currently employed must fundamentally change.<sup>54</sup> As such, the O & O describes a force for SSCs in complex [forested areas, jungles, mountains, etc.] and urban terrain, confronting “low-end and mid-range threats that may employ both conventional and asymmetric capabilities.”<sup>55</sup> Achieving decisive action through dismounted infantry assault, the IBCT is designed to begin operations to shape the battlespace; however, it is not able to conduct forced-entry operations. Thus, the force is an infantry-centric organization with a core composition of three mechanized infantry battalions and a reconnaissance, surveillance and target acquisition squadron (RSTA) integrated with all of its other units for combined-arms organization. Collectively, these four units will account for approximately seventy-five percent of the IBCT. Theoretically, the IBCT thus offers a commander the ability to disrupt enemy operations with highly maneuverable forces capable of sustaining operations up to 180 days “without relief.” Implicit in this description is the use of the IBCT behind lead forces (such as a Marine Expeditionary Unit) in order to negate enemy plans until follow-on forces are available, or even to compel the enemy forces to submission by the brigade’s own action.

Engaging the enemy, the IBCT will combine fires from on-board weapons systems, combined arms integration of mortars, integrated joint effects, and mobility support. Thus, the O & O suggests a highly networked unit both among its component forces as well as to its higher echelon support. Critical to this successful dismounted maneuver will be the IBCT’s “enhanced situational understanding and information dominance.” To meet this need, the brigade will have a robust, multi-level, integrated suite of intelligence, reconnaissance and surveillance (ISR) to

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<sup>53</sup> “The Full Spectrum Brigade,” Organizational and Operational Concept, 1 Nov 1999.

<sup>54</sup> Ibid, 4.

<sup>55</sup> Ibid, 5.

develop and disseminate a “common operational picture” throughout the force. The RSTA squadron within the brigade thus forms the linchpin to successful operations. The RSTA will provide situational understanding and information dominance to enable the IBCT to “avoid surprise, develop rapid decisions, control the time and place to engage in combat, conduct precision maneuver, shape the battlespace with precision fires and effects, and achieve decisive outcomes.”<sup>56</sup> As one Army officer described the application of the RSTA to the dismounted maneuvers, “this is not a brigade that will find the fight by bumping into it.”<sup>57</sup> Additionally, responding to the need for lethality in these fights, the IBCT will possess a wide array of direct and indirect fire systems “adequate to shape the battlespace and achieve decision in the close fight inherent within complex and urban terrain.” Mortars and limited anti-tank capability thus are embedded “from maneuver elements down to company level” in order to defeat hardened/fortified positions and enemy mechanized forces.<sup>58</sup>

Ultimately, IBCT employment falls under two main concepts—shaping and decisive operations. In order to establish the conditions for decisive action, shaping operations include pre-combat early deployment, manifest presence (moving into employment range) or other activities “intended to influence the enemy’s will and his assessment of his chance of success, with the goal of deterrence.” If feints, information operations and extended reconnaissance fail to deter, decisive operations are begun “against decisive points in complex terrain” within a maneuver box of approximately 50 km x 50 km. Within this area, infantry battalions will operate in smaller, non-contiguous areas while the RSTA squadron disperses over the entire

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<sup>56</sup> Ibid, 13.

<sup>57</sup> “New Brigades Will Offer ‘Shoot and Move’ Capability,” ArmyLINK News, 14 Mar 00 ([www.dtic.mil/armylink/news/Mar2000/a20000303lewisbct.html](http://www.dtic.mil/armylink/news/Mar2000/a20000303lewisbct.html)).

<sup>58</sup> O & O, 13.

region.<sup>59</sup> Central to IBCT operations in these maneuver areas will be a critical shift in focus. Whereas in the past, Army fires were platform-and system-oriented and planned with a positioning and weapons systems allocation focus, the new goal is achieving specified effects in time and space through an effects coordination center (ECC). The O & O cites this as an emerging operational, organizational and doctrinal evolution that lies at the heart of the IBCT orientation.<sup>60</sup> Comparatively, the evolution addresses the following shifts:

**Table 1. IBCT Conceptual Shifts**

<b><i>FROM:</i></b>	<b><i>TO</i></b>
Make contact; develop situation; maneuver force	Understand situation; maneuver; make contact
Deploy with all anticipated supplies/equipment	Take essentials—remainder on demand
Planning centric—sequential, hierarchical	Execution centric—parallel and collaborative
Relative knowns (environment;enemy;doctrine...)	Relative unknowns (variety: conditions, “enemy”)
Enemy as armed force combatants	Plus: organizations/agency/persons as obstacles
Forward deployed, prepositioned equipment	Rapid deployment with integral equipment
Mature theater, developed infrastructure	Immature theater, underdeveloped infrastructure
Combined arms at battalion level	Combined arms at company level

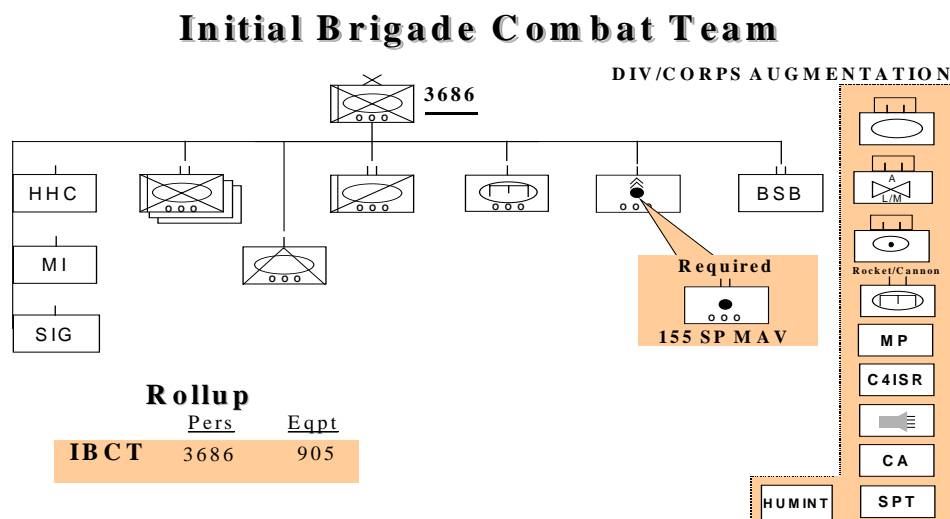
## **Order of Battle**

As mentioned earlier, the specific structure of the IBCT is under development. However, a reasonably accurate depiction of the force may be drawn from available information. Recently, a “first look” at the composite units of the IBCT was unveiled. At the time of this writing, experimentation continues and personnel and equipment figures are undergoing modest changes; but the essential force structure remains constant. Indeed, given the critical nature of the four base units (3 infantry battalions and an RSTA squadron) to the success of the brigade, the following figures cannot be significantly altered without the introduction of currently unavailable

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<sup>59</sup> Ibid, 26-27.

weapons technology. Thus, the overall structural picture of the IBCT appears as figure 3.1, below.



**Figure 1. IBCT Overall Structure<sup>61</sup>**

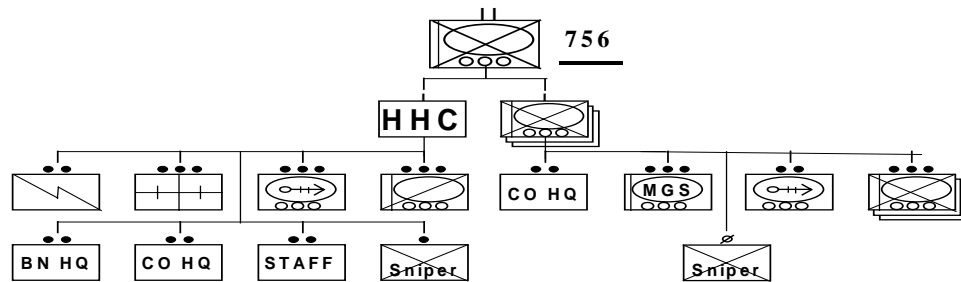
This figure reflects the O & O concept of embedding unit-based capabilities—military intelligence, signal, engineer, anti-tank, artillery and combat service support (CSS)—specifically tailored to the given scenario. From left to right in the figure, are the headquarters company; three mechanized infantry battalions; an anti-tank company; the RSTA battalion; an engineer company; a rocket artillery battery; and a brigade support battalion. Additionally, on the left are intelligence and signal companies. The area to the right indicates projected augmentation for action at division or corps level (outside the scope of this examination but included to depict

<sup>60</sup> Ibid, 40.

<sup>61</sup> Figure Excerpted from “Four-Star Conference: Initial BCT Charter Operational and Organizational Concept” briefing, 10-11 January 2000. This briefing was presented by the Army’s TRADOC (as executive agent for the “Army Management Team,”) to other service General officers as an introduction to the Army’s transformation. Repeated attempts to verify the post-briefing development changes with TRADOC offices have met with little success. At the time of this writing, TRADOC (and the majority of Army organizations) are unwilling to engage in discussion regarding the IBCT development outside of higher echelons of command.

additional requirements should the SSC magnify). Each of the primary IBCT units will be highlighted, below.

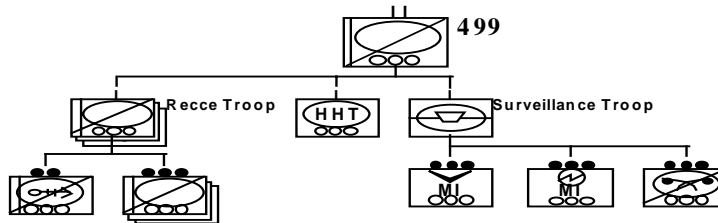
## Infantry Battalion



The IBNs are the primary maneuver elements of the IBCT. Essence is combined arms at the company level comprised of infantry, mobile support guns, mortars, anti-tank and snipers. Dismounted/mounted infantry assault supported by fire support teams, fires from organic Infantry Carrier Vehicles (ICV), and above weapons. Agility and

**Figure 2. Infantry Battalion Structure**

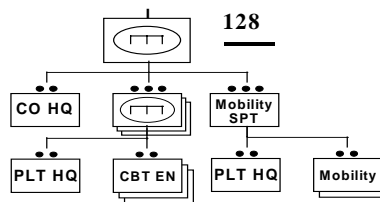
## RSTA Squadron



Robust HUMINT and technology-based recon. Variety of collection assets to develop understanding around and within maneuver battalions' and brigade's area of responsibilities. Ability to analyze and distribute information—the BDE's primary intelligence source. three recon troops including IAVEL IN anti-armor and 120 mm

**Figure 3. RSTA Squadron Structure**

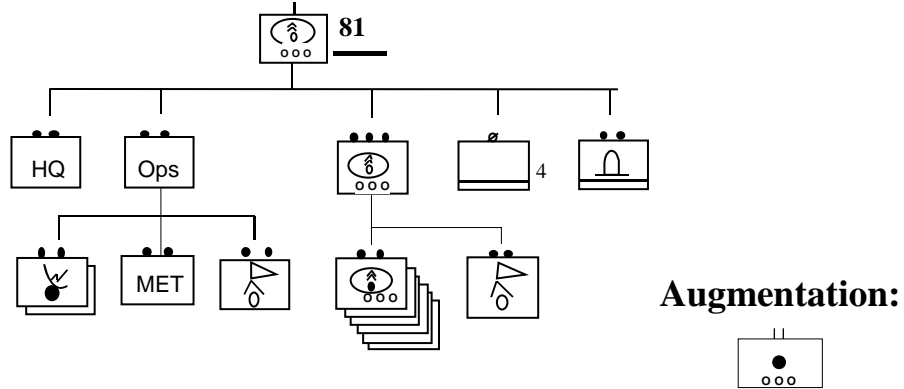
## Engineer Company



Optimized for mobility support for BDE tactical mobility. Embedded support is required for sustained momentum. In a contingency requiring support for counter-mobility, survivability or construction, engineer capabilities will be mission-tailored to the BDE in augmentation packages. Close link with RSTA picture enables mission-essential equipment/materials only which reduces size/footprint

**Figure 4. Engineer Company Structure**

# Artillery Organization



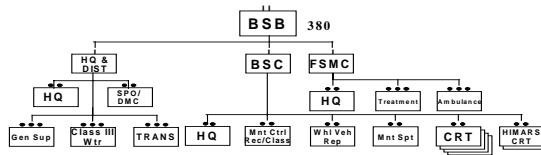
## 155 SP MAV

Close support fires provided by mortars embedded in the companies/battalions and by Joint fires. Mitigates risk of loss or degradation of non-organic, Joint air and sea support. Focused mainly on conducting responsive, proactive counter-battery fires. Best single system option (Medium Armored Vehicle bsd 155 mm howitzer) not currently available, but a single rocket battery (HIMARS) will be used in the interim. Artillery

**Figure 5. Artillery Company Structure**



## Brigade Support Battalion

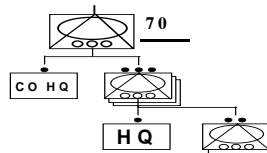


<b>Arm</b>	<b>1:28</b>	<b>Ammo Handler per Cbt Veh</b>
<b>Fix</b>	<b>1:6</b>	<b>Maintainers per Vehicle</b>
<b>Move</b>	<b>3:1</b>	<b>HEMTT Equiv per Bn</b>
<b>Fuel</b>	<b>1:66</b>	<b>Tankers per Vehicle</b>
<b>Sustain</b>	<b>1:74</b>	<b>QM per Bde Personnel</b>
<b>Medical</b>	<b>1:18</b>	<b>Med per Bde Personnel</b>

Designed to perform distribution-based, centralized logistics functions in accordance with Army XXI combat service support concepts. Effectiveness linked to most advanced CSS C2 employment, enhanced situational understanding, and exploitation of regionally available resources through joint, multinational, host nation or contract sources. BDE excludes other unit-based capabilities such as aviation support, cannon artillery, air and missile defense, combat construction engineers, bridging and military police.

**Figure 6. Support Battalion Structure**

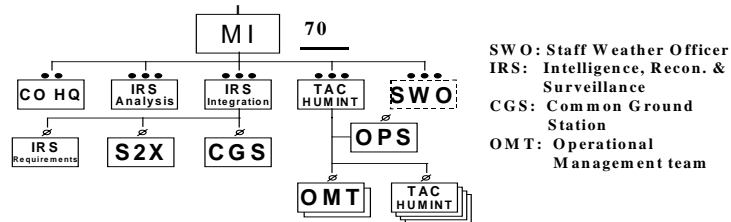
## Anti-Tank Company



The BDE's primary tank-killing capability through stand-off fires against enemy armor. Designed to increase BDE flexibility and survivability, particularly in open terrain. Comprised of three platoons, each with four fire-and-forget TOW IIB systems mounted

**Figure 7. Anti-Tank Company Structure**

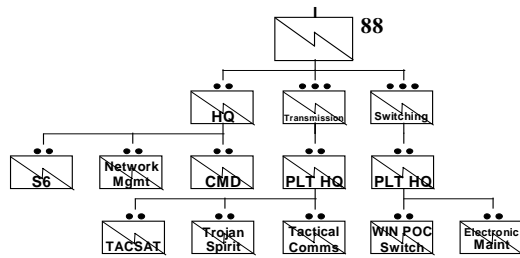
## Military Intelligence Company



Intelligence, analysis, collection planning and management—linked to collection executed by RSTA squadron. Exploits reachback via interfaces with intelligence systems through Army, Joint, theater, national, coalition and NGO/PVO levels. Essentially operates as an extension of the RDF staff for the

**Figure 8. Intelligence Company Structure**

## Brigade Signal Company



Employs latest-generation communications architecture. Establishes non-line-of-sight connectivity in any terrain. Makes feasible distributed operations in complex/urban setting to enhance maneuverability and C2. SATCOM

**Figure 9. Signal Company Structure**

Guiding the above units is a Headquarters company which is geared to execute command and control “on the move.” The goal of the structure is to improve and streamline commander

and staff integration. This is achieved by ensuring information comes to mobile commanders who, in turn, can expedite the planning, preparing and executing phases of operations. Employing horizontal and reach-back collaborative capabilities, staffs will thus respond more rapidly and effectively to the commander's intent and requirements. The net result is greatly accelerated course of action (COA) execution under an essentially continuous cycle.<sup>62</sup>

### **Centerpiece Equipment**

At the heart of the IBCT rapid deployment and maneuverability is the employment of a medium armored vehicle (MAV) as a common-use platform. Although the acquisition process is currently under examination and competition, the Army has revealed the basic requirements of the vehicle. Above all, the MAV must be roll-on/roll-off (RoRo) capable for a C-130 transport and be ready for immediate combat employment upon arrival at the area of operations. To make this possible, each of the vehicles "must not exceed 38,000 lbs (19 tons) combat-capable deployment weight to allow C-130 transport of 1,000nm...and [the capability] of an assault strip landing."<sup>63</sup>

Beyond this weight requirement, the MAV must be configurable into an estimated twelve variations. The most important of these for the brigade is the infantry carrier vehicle (ICV). Because the IBCT relies upon dismounted assault for effective operations, the ICV is described

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<sup>62</sup> This description, as well as each of the figure's textual commentary, is drawn from the O & O as well as the "Four Star Conference" presentation. Confirmation of the basic goals/capabilities of each unit were validated by conversations with various FORSCOM and TRADOC officers (names withheld upon request). These Army officers described the current proposed structure, to include number of personnel and equipment.

<sup>63</sup> Scott R. Gourley. "Milestones In Army Transformation," *ARMY*, March 2000 (vol. 50 no 3), 32. Here, Gourley quotes Tank-automotive and Armaments Command (TACOM) and TRADOC planners commenting on the on-going experimentation.

as the “pacing item for the entire formation.”<sup>64</sup> With a maximum crew of three, this configuration must be able to carry up to ten combat-equipped soldiers allowing transportation of the nine-man squads inherent to the IBCT. Of the IBCT’s estimated 450 total MAVs, the ICV platform will total approximately 150 vehicles. The remaining eleven configurations (with estimated numbers) include: mobile gun system (MGS) (37); reconnaissance (64); antitank guided missile (ATGM)(12); command and control/tactical operations center (TOC) (48); mortar carrier (36); self-propelled howitzer (18); engineer (20); striker/fire support team (13); NBC recon (4); medical evacuation/treatment (42); recovery (6).<sup>65</sup> Collectively, these vehicles significantly reduce deployment time and lift requirement by not only reducing equipment weight but also multi-platform maintenance needs.

### **Logistics Process**

While the MAV is a linchpin development for the IBCT, it remains a subsidiary aspect to the overall brigade logistical orientation. The viability of the IBCT will in fact rest on the development of a significantly streamlined logistical process. General Shinseki highlighted this fundamentally inhibiting aspect of current Army units when he revealed his “vision” statement declaring that “today, 90 percent of our lift requirement is...our logistics tail.” As such, every

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<sup>64</sup> Scott R. Gourley. “New Brigade Structure Begins To Emerge,” *ARMY*, February 2000 (vol 50 no 2), 34.

<sup>65</sup> Configurations and numbers drawn from the “Operational Requirements Document for a Family of Medium Armored Vehicles (MAV) ACAT I,” Draft Version, 21 Dec 99. This ORD has been slightly modified, but as yet, no final version is available. However, according to Scott Gourley, the basic requirements as of this writing remain unchanged. The Draft ORD also includes detailed descriptions for the configurations to include armament, protection ranges, speeds, supplies and the like.

aspect of the IBCT is focused on scaling that percentage down to a more manageable figure without creating undo risk to the forces.<sup>66</sup>

The primary focus of this logistics reduction naturally lies in supply. With the initial self-sufficiency target of only 72 hours in combat action, resupply has an inherently critical role. The O & O describes the IBCT's supply requirements as "heavily reliant upon aerial resupply for initial flow of operational stocks." Thus, before sealift or prepositioned supplies can be brought to bear, the IBCT will require an airlift lifeline for as many as two weeks. As such, the various brigade supply units are geared toward lean tables of organization and equipment (TOE).

For example, the transportation platoon will have the ability to move "308 short tons (STONS) of materiel" to accommodate the "estimated brigade day of supply of 195 STONS." Additionally, the ammunition section is capable of "receiving, storing and issuing 72.6 STONS of ammunition in a single lift." Another example is the support battalion's water storage. With a 7,500-gallon capacity, the unit will contain sufficient supply for two gallons per day per man with an emergency capability for purification of three thousand gallons in 20 hours. Fuel supply is also reduced. With sixteen 2,500-gallon fuel trucks (HEMTTs), the fuel platoon will rely on "regional contracts and/or reserve stocks" for the majority of its needs, yet will have the organic supply for initial combat maneuvering.<sup>67</sup>

Combined with the reduced size and number of vehicles and troops, these support structures form the backbone of a small-footprint brigade. Compared to a "Force XXI" brigade under development at the time General Shinseki released his "vision," this IBCT has approximately half the lift requirements. That is, considering the more traditional employment of the Force

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<sup>66</sup> "Army Chief Stresses Agility, Firepower," *Aviation Week and Space Technology*, Oct 18, 1999, 36.

XXI brigade (conventional force-on-force), the IBCT's targeted SSC mission (speed, maneuver, less actual engagement) allows for a significant decrease in firepower (namely tank platoons) without compromising relative combat needs. The result is a flexible, maneuverable force with tailorable units for specific scenarios and, most importantly, a reduced logistic footprint. Specifically, the initial figures estimated by the Army for overall lift requirements were ten thousand STONS and 3,055 personnel. In the last few months, analysis has focused on reducing this number to less than eight thousand STONS (in order to meet the 96-hour closure envisioned by Shinseki). At the time of this writing, the number under exploration is something less than 7,800 STONS, though the forthcoming TOE may introduce a somewhat larger figure.<sup>68</sup>

## Summary

General Shinseki has targeted the creation of initial brigade combat teams to begin the Army transformation. As outlined above, this IBCT has taken previous efforts toward leaner, more maneuverable units and added the technological leverage of the last few years. The result is a unit of enhanced strategic flexibility and increased effective firepower ready to overmatch any

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<sup>67</sup> "The Full Spectrum Brigade: Organizational and Operational Concept," 1 November 1999, 37-38.

<sup>68</sup> The initial figure was provided by Maj Michael Sandquist, of Air Mobility Command's Tanker Airlift Control center (TACC/XOP). Maj Sandquist created one of the original briefs for J-4, Transportation Command (TRANSCOM) upon request of the Army transformation team. The results of his analysis will be explored in Chapter 4. The 'current' figures are drawn from the "Four Star" briefing, and likely reflect the effect of Maj Sandquist's examination. Namely, the 96-hour closure with 10,000 STONS proved unrealistic. Thus, it is highly probable that Army planners moved toward the 7,800 STON figure as another attempt to reach a workable figure for airlift. This is, of course, conjecture. However, the timing of the various airlift examinations would seem to indicate a direct correlation between what Air Force (AMC) analysis has offered and what the Army planners are targeting behind closed doors. It is important to note, however, that there are several significant differences in the assumptions made by Army and Air Force planners in order to reach a 96-hour timeline. Among these are number of C-17 and C-5 aircraft available and status of aerial ports of debarkation (APODS). Both of these are also explored in Chapter 4.

enemy maneuvers and maintain military initiative. Indeed, one of the more unique aspects of the IBCT will be its innate “scaleable” force structure, wherein the deployed force may be readily tailored in accordance with the factors of mission, enemy, troops, terrain and time (METT-T).

While pressing forward with the operational timeline, the Army nonetheless continues to incorporate new systems and procedures into the developing IBCT. In so doing, the Army is setting an impressive precedent for idea-to-acquisition-to-employment speed. Pushing the Army ahead and drawing contractors along, General Shinseki is on pace for this first installment of his objective force. The result should be a brigade that, unlike previous attempts, will avoid the slow death of lengthy development periods. Indeed, maintaining the flexibility to incorporate technological and systemic innovation while under development will likely enable the creation of the most modern force possible at the time of its initial operational capability date.

The problem for the IBCT, however, remains that of previous Army “rapidly deployable” units—they require dramatic, on-demand lift to deploy. A 96-hour deployment timeline requires all-air movement which is severely challenged by the initial tonnage. To be sure, a significant achievement of the IBCT is the elimination of out and oversized cargo requirements (such as aviation units and tanks). This greatly reduces the type and number of special airlift aircraft required. However, the remaining equipment and personnel of the IBCT still pose a difficult problem for airlift. Under the assumption that the IBCT’s current structure cannot be significantly reduced without creating unwarranted levels of risk in combat, the problem of deployment broadens to include the Air Force airlift and tanker capabilities<sup>69</sup>. Imbedded in these

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<sup>69</sup> Although the final force structure of the IBCT is still unknown, it is dubious that a significant load reduction is possible from reducing troops or units. It is apparent from Army sources that the fundamental battle plan of the IBCT for a SSC is already minimally met by the structure offered in this chapter. (Note the multiple augmentation units required for IBCT employment as an accompanying force in a larger than SSC scenario). Granted, if some new system or weapon

capabilities is the flexibility of the military as a whole in terms of determining deployment priority. Whether this new IBCT force will be the primary unit desired by a CINC will largely determine lift availability. In the next chapter, this deployment challenge will be explored with a look at assumptions and requirements for airlift as well as an estimate of probable airlift capabilities in the immediate future.

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emerges before mid-2001, further force reductions are conceivable. However, the purpose of this study is to explore the probable, not the desirable. The only plausible area of reduction would be the number of MAVs, which translates into a commensurate reduction of available firepower. This might be accomplished by reducing the area of responsibility of the IBCT below the estimated 50km x 50km "box." At that point, however, there begins a certain amount of diminishing returns for the CINC as the overall combat reach of the IBCT offers him less employment options



## Chapter 4

### Airlift: Problem and Potential

*Complete mobility can be reached only through control of the air and free movement through the air to the objective. To attain that mobility we must do more than pay lip service to being air transportable.*

—Capt M.J. Berenzweig  
Infantry Journal, 1950

*We have learned and must not forget that from now on air transport is an essential element of airpower, in fact, of all national power.*

—Gen H.H. Hap Arnold

### Introduction

Although the ultimate structure of the Interim Brigade Combat Team remains forthcoming, the previous chapter provides an approximate estimate of the overall size and shape of the unit. Well on its way to becoming a reasonably potent SSC force, the IBCT is nonetheless dependent upon airlift to meet the ultimate objective of rapid deployment. Indeed, for any substantial movement of men and material around the globe in less than a week, one cannot look for deployment support from sealift sources.<sup>70</sup> And,

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<sup>70</sup> As an example, TRANSCOM's fastest cargo ships, Fast Sealift Ships (FSS), still averaged only 24 knots over the 8,700 mile journey from CONUS to Saudi Arabia for Desert Shield. Thus, added to an initial 5-7 days of activation, sailing time of 13-16 days places sealift movement well outside of the IBCT objective timeline. For a complete discussion of sealift operations during Desert Shield/Desert Storm, see Conduct of the Persian Gulf War, Final Report to Congress, Vol II, Section F.

although certain pre-positioned assets might aid in expediting combat employment, such use is not currently within the parameters of General Shinseki's interim "vision." That is, in order to be globally responsive within 96 hours, the IBCT cannot rely upon the proximity or movement into theater of such equipment. Rather, its effective crisis response relies upon cohesive, integral movement into combat. Thus, matching airlift capability to IBCT requirements will determine the feasibility of the new force leading the Army's transformation.

## **Definitions**

Before examining the actual IBCT lift requirements, a brief review of relevant definitions is in order. The following terms are common-use for the all of the services with respect to airlift. Most importantly, they provide the lexicon for the remainder of this chapter's analysis.

- **Tons:** The standard unit of weight measure for airlift cargo. Specifically, airlift uses "short tons" (S/TNS = 2,000 pounds) as a common term. The physical dimension or shape of cargo may, however, preclude its movement on certain aircraft despite meeting the craft's weight limitations. (Normally, this is a reference to "out" and "over-sized" cargo which can only be moved by certain aircraft. For example, M1A2 Abrams tanks or AH-64D Apache helicopters only "fit" in C-5s or C-17s despite weighing less than a KC-10's maximum cargo load).
- **Ton-Miles:** A unit of measure that includes both the weight of the cargo and the distance it must be carried. For example, airlifting a 2-ton truck the 5,500 nautical miles from Travis AFB, California to Aviano, Italy would amount to a workload of 11,000 ton-miles.
- **Millions of ton-miles per day (MTM/D):** The standard unit of measure of theoretical airlift capacity. For example, 36 MTM/D is the capacity to move 6,000 tons of cargo over 6,000 nautical miles in one day.

- **Theoretical capacity:** A measure of what, in theory, airlift planes could carry when mobilized. This is calculated using average measures of each plane's performance (average payloads and reliability rates). It provides more realism for planners than attempting to coordinate airlift on "paper" capabilities. For example, although the C-5 is technically able to carry 290,000 pounds, experience has proven that the aircraft often "cubes-out" (runs out of space) before its maximum load weight is reached. Thus, planners use a theoretical capacity figure of approximately 125,000 pounds. Also added in this figure is a historical consideration of reliability. Planners consider the mission capable rate of the aircraft type as cargo capability is derived. This is perhaps the most critical aspect of airlift calculation, for it grounds planning in reality. An example is illustrative: If in planning for a contingency response one considered employing 10 C-5s at theoretical capacity over a 24-hour period, and did not include compensating for the aircraft's 60 percent mission reliability rate, the deadline would undoubtedly be missed. Finally, it is important for the reader to consider that theoretical capacity *does not* include constraints that may be experienced in deployment (airfield limitations, etc). As a result, actual airlift deliveries tend to be even lower than theoretical capacity.
- **Maximum on the Ground (MOG):** An average measure of the number of planes that a particular airfield can service at any given time. It reflects both the physical limitations of an airfield (ramp space, refueling capabilities, load/unloading equipment) and the competition for its use (i.e. civilian and/or host nation use). Airfields generally have two MOG figures: 1) Reflects in/out capability, such as how many aircraft can land, load/unload, refuel, and depart at a time and 2) Reflects overall capacity of the field, as in how many aircraft can be parked on the ramp for periods of time. It is important to remember that MOG is a flexible figure. That is, adding a Global Reach Laydown Package (GRL) of personnel and materials handling equipment (MHE) to a field can increase the MOG. Additionally, "creative" ramp usage can, in times of dire need, increase the MOG. For example, it is often possible to park aircraft on taxiways or other non-ramp

areas.<sup>71</sup>

## **IBCT Movement**

### **Preliminary Analysis**

As the Army began IBCT development in earnest in late 1999, the transformation team made an initial estimate of the airlift requirements. When this effort was briefed at a cross-service Four-Star Conference in January 2000, a sobering deployment comparison was offered. Though created under the acknowledgement (and caution) that the figures were selected prior to a Table of Organization and Equipment (TOE), the deployment brief indicated that several significant gaps existed between the developing force and realistically available airlift. Specifically, the comparison examined the needs for an IBCT with HIMARS as well as one with 155mm augmentation. Additionally, the figures were presented under two cases—three and six available Aerial Ports of Debarkation (APODs), respectively. The result was a determination that even with six APODs, the HIMARS IBCT required 6.3 days to close, and the 155mm version, 7.4 days.

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<sup>71</sup> One example illustrates both aspects to MOG. In 1996, tensions were mounting in the Middle East over new challenges from Iraq. Increased aircraft were ordered to the region by the NCA. One destination for additional refueling planes was a field in the United Arab Emirates. Although normally this field has a MOG of 5 aircraft for parking and 2 for service, during the contingency 12 handling and refueling personnel were added, and parking was improvised, resulting in 8 aircraft on the ground and a servicing increase to 4 aircraft for refueling. It is noteworthy that MOG, as defined in the above text, is only a functional description for the purposes of this essay. There are more aspects and implications to the term, such as wide-body or narrow-body MOGs, “working” MOGs, and how a MOG figure relates to aircraft already stationed/deployed to a particular field. For an in-depth exploration of this and the other terms offered above, see Air Mobility Command’s, Command Data Book, November 1999 and the Airfield Suitability Report (published annually by the Tanker Airlift Control Center (TACC), AMC). Additionally, associated terminology (such as GRL) is found in the “Air Mobility Strategic Plan 2000,” produced by Air Mobility Command (AMC/XPXPL).

To be sure, this was a marked improvement over the Force XXI brigade estimate of 12.5 days; still either case fell well short of the 96-hour target. Moreover, the “conditions” and assumptions for the case studies included an allocation of 40 C-5s and 43 C-17s, numbers that exceed current availability, to say nothing of concurrent airlift needs for the other services.<sup>72</sup> Ultimately, the briefing stated, “Unit weight must be less than 7,800 S/TNS to close in 96 hours.”<sup>73</sup> Not only does this figure represent a significantly lower tonnage than current estimates for the IBCT, but the scenario also assumed that all APODs would be available and open with appropriate personnel in place. Thus, the airlift requirement suggested apparently neglected the lift needed to move additional crews and GRL equipment into the theater—an aspect that requires at least one full day of lead-time.

## **Second Round**

Nearly concurrent to the Army Four-Star presentation was an Air Force effort to compute the estimated lift requirement of the IBCT. Provided with initial figures of 10,000 S/TNS and 3,055 personnel, TRANSCOM was asked in December 1999 by Army logistical planners to prepare an initial estimation of airlift assets required. Included with the figures were several assumptions to include: no use of Civil Reserve Air Fleet

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<sup>72</sup> See note 5 below for Utilization Rate considerations. In addition, there are apparently problems with the estimated airlift loads for the C-5 and C-17. Although the AMC Command Data Book reveals that the payload capacity of C-5s is 291,000 lbs, and C-17s is 170,500lbs (pages 5-6), the planning numbers of AMC are significantly lower. Mr. Dave Merrill, AMC’s primary airlift capabilities expert explained in a telephone interview that planning is based upon 45 tons for the C-17 and 61.3 tons for the C-5. Load requirements are thus derived by taking the aggregate tonnage of various loads (equipment types) and dividing by the respective tonnage. Airlift history validates these figures as cubic capacity of the aircraft almost always is the limiting factor, not actual S/TNS.

(CRAF); McChord AFB, WA as the aerial port of embarkation (APOE) and three APODs in the Balkans for a Kosovo-type scenario. The task of lift analysis fell to Air Mobility Command's Tanker Airlift Control Center (TACC), which has several divisions for appropriate study.

The results of this preliminary study clearly indicated that something had to “give”—either the weights and personnel or the timeline—in order to meet a 96-hour force closure. Specifically, TACC analysis discovered that the IBCT figures required 44 C-5 and 31 C-17 aircraft. In addition, six 747 equivalents were necessary to move the GRLs.<sup>74</sup> The problems with these requirements are significant. Namely, AMC expects to have only 35 C-5s and 32 C-17s available on any given day.<sup>75</sup> Moreover, movement would require a minimum of 24-48 hours of lead-time to deploy the extra aircrews and reception (MHE) teams to staging and APOD bases. The net result of such challenges was a risk estimation of “very high” for the endeavor.<sup>76</sup>

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<sup>73</sup> See “Deployment Comparison” slide, “Four-Star Conference on the IBCT Charter Operational and Organizational Concept,” 10-1 Jan 2000.

<sup>74</sup> This figure, indeed the entire discussion, stems from a discussion with the author and primary developer of the analysis, Maj Mike Sandquist of TACC/XOP. Major Sandquist noted that MOG increases at bases required 10 C-5 equivalent loads and 3 747s to move the estimated 582 passengers and 695 S/TNS.

<sup>75</sup> Maj Sandquist offered that these availability numbers were based upon “typical days in AMC airlift history.” The difference between total number of aircraft in the inventory and the number available includes (mostly) those aircraft designated for training and those normally dispersed on day-to-day missions. Neither of these can be immediately reconstituted for contingency response. It is instructive to note that senior NCA air movement carries the highest priority among airlift missions. Not even during Desert Storm did this prioritization (thus, reduction) of airlift assets change.

<sup>76</sup> Another TACC officer explained that “very high” risk is AMC’s polite method of declaring something “nearly impossible.” Understandably, the officer spoke on condition of anonymity. AMC does not, however, shy away from straight presentation, and in this initial briefing the Army was shown forthrightly that “Current air mobility assets are less than required for 96-hour closure.”

Nevertheless, the AMC analysis team developed a proposal for the IBCT movement. Their solution settled upon a combination of 27 C-5s and 30 C-17s, with an expected reliability rate of 75% and 95%, respectively. This combination succeeded in meeting an IBCT closure in theater of 7.2 days at a risk evaluation of “moderate.”<sup>77</sup> Inherent in this analysis is the assumption that “no other forces will move by air during the deployment.”<sup>78</sup> Thus, the most reasonable estimate offered by AMC analysis suggests that airlift assets available offer a time-line nearly double that of the proposed 96-hour objective. Additionally, though these airlift assets could achieve the 7.2 figure with “moderate” risk, the notion that a requesting CINC might accept freezing any other unit moves during the same period is suspect.

### **Relevant History**

*We had a four foot opening trying to push airlift through that 7,000 mile long hose and come out a 4” nozzle at the other end. It doesn’t work very well.*

*—Lt Gen Vernon Kondra, MAC/XO,  
(On Desert Shield Materiel Movement)*

In the rapidly deployable IBCT, the Army is aggressively attempting to reverse the trend of the last decade that created increasingly heavier and logistically challenging

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<sup>77</sup> As of this writing, the 27/30 C-5/C-17 estimate is “still fairly accurate,” according to Maj Sandquist. However, differences of opinion exist even within the airlift community. For example, the Air Mobility Strategic plan 2000 cites a planning utilization rate (UTE) for the C-17 at 90%, not the 95% hoped for in the suggested analysis. (See AMSP, section 2.4.1) Moreover, current C-5 reliability remains under 70% (as per 5 Apr 00 survey of Travis and Dover AF bases—the two primary locations for the aircraft).

<sup>78</sup> Excerpted from “XOP Brigade Combat Team Airlift Feasibility Analysis” briefing, 24 January 00. A key reason for this is the limitations of the analysis on 3 APODs in the Balkan region and the associated MOGs. Clearly, if the analysis was directed at a theater with more airfield opportunities, the timeline could be reduced. However, this was the setting suggested by the Army, which is congruent with the Army’s (TRADOC, Gen Shinseki, et al) focus on the IBCT as an ideal force for an SSC such as Kosovo.

units. In 1990, General Carl Vuono, then Army Chief of Staff, defined the Army's strategic position as "the ability to deploy a five-division corps, with associated support in 75 days."<sup>79</sup> Significantly, General Vuono's comment came at a time when the Army was experiencing marked increases in unit weights. For example, between 1987 and 1994, a notional mechanized division's tonnage rose some 49 percent.<sup>80</sup> Comparatively, Gen Shinseki is currently driving all unit weights and sizes to more lean figures, so as to move a similar five-division force in only 30 days. This philosophical change is most evident with the IBCT development.

### **Comparative Case #1—Desert Shield**

Although the IBCT is under formation and is primarily designed for SSCs, historical data for deployment of more traditional Army units to a major theater war (MTW) is nonetheless relevant for this study. In particular, the airlift effort in Desert Shield offers some worthy lessons that warrant addressing by planners for an IBCT deployment. If such lessons are applied to today's airlift challenge, critical deficiencies can be avoided under real-time deployment. Never again should the armed forces allow themselves to be caught (as the CENTCOM staff in 1990) in a situation where "airlift requirements [for the first few days of deployment] exceeded organic airlift capability by a factor of six to seven."<sup>81</sup>

As a proven success story, the airlift support for Desert Shield was nonetheless no small miracle. Despite the estimation of staffs (as cited above), personnel and equipment

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<sup>79</sup> Excerpted from: Angela R. Phelps, Maj, USA. "Strategic Mobility," *Army Logistician* (May-June 1996), 26.

<sup>80</sup> Moving U.S. Forces: Options for Strategic Mobility, CBO Study, February 1997, 81.

<sup>81</sup> Gulf War Air Power Study, Volume III, "Logistics and Support," Eliot A. Cohen, Director. Washington, D.C., 1993, 82.



flowed into the theater at unprecedented rates, which generally exceeded planning expectations. Three specific aspects of the Desert Shield effort offer sobering lessons for the IBCT planning assumptions and expectations. First, coalition members joined the United States in a major theater effort, and with these forces came additional lift requirements. The deployment of necessary equipment thus warranted the employment of all available assets, to include the elimination of nearly all peacetime, day-to-day movement. Second, at the time of the effort, the US Air Force possessed significantly more airlift aircraft than exist today. In terms of overall tonnage, C-17s offer greater load capacity than the retiring, more numerous C-141s. However, Desert Shield data indicates that the *number of aircraft* proved to be the more significant figure, *not maximum payload*.<sup>82</sup> Third, the number of APODs in the immediate theater of operations was substantial. Primarily, twelve airfields were used, over half of which had modern facilities and substantial runways and ramp space.<sup>83</sup>

Despite these three critical supporting factors to the Desert Shield logistical effort, the amount of cargo moved in the first two weeks indicates that even the significantly lower requirements of today's IBCT would have been difficult to accomplish. Specifically, even with the tremendous draw of airlift resources available, AMC (then Military Airlift Command) moved approximately 28,400 S/TNS in just under 1,000

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<sup>82</sup> Within the first two weeks of Desert Shield, "94 percent of USAF C-5s (118) and 73 percent (195) C-141s were supporting" the effort. In addition, Strategic Air Command tankers began immediate contributions in cargo and passenger movement, while the CRAF was quickly initiated adding still more aircraft to the movement. See Conduct of the Persian Gulf War, section F for a complete discussion of the aircraft involved.

<sup>83</sup> Gulf War Air Power Study, Volume III, Figure 15, 103. See also Conduct, F-12 – F-16 for more discussion on APODs as well as host nation support for the deployment.

missions.<sup>84</sup> Interestingly, the initial IBCT estimate of ten thousand S/TNS is approximately one-third of the Desert Shield 14-day figure and 96 hours is just under one-third of the timeline. In other words, if all three of the primary factors listed above were in existence for an IBCT deployment, it would be possible. However, the more likely assumption is that IBCT deployment for a SSC would not warrant such extremes in the national airlift infrastructure.<sup>85</sup>

### **Comparative Case #2—Allied Force**

Although Operation Allied Force proved to be essentially an air campaign, the duration and logistical demands of the endeavor offer the most recent example of transportation requirements for a SSC. Indeed, given that the Army has chosen to introduce the IBCT as a conceptual force for a “Kosovo-type operation,” the support demands of the operation deserve an examination. Moreover, in light of the Desert Shield figures, an airlift performance update is readily available from the Kosovo campaign.

As the reader will recall, one of the debatable aspects of the mobility airlift requirement for the IBCT is the performance factor of the aircraft involved. As the C-141 fleet retires, the capability of the C-17 for airlift potential becomes increasingly

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<sup>84</sup> Thomas A. Keany and Eliot A. Cohen. Revolution in Warfare? Air Power in the Persian Gulf, (Annapolis: Naval Institute Press, 1995), 245-247. Figures are drawn from the tables on these pages with estimates made for lesser periods of time (i.e. two weeks vice a month).

<sup>85</sup> As a further statistical note, JTF Proven Force (Desert Shield efforts in Turkey) required a remarkably similar 8,000 S/TNS and 4,000+ personnel. This was accomplished using 98 C-5s, 102 C-141s, 82 C-130s and “35 other support aircraft.” To be sure, this materiel and equipment had multiple destinations, thus a straight-line comparison of weights and passengers is not exactly sound mathematics. However, the differences in APODs only slightly diminish the comparative relevance of the JTF figures to those of the IBCT.

paramount. In fact, one of the fundamental concepts behind the replacement of the C-141 with the C-17 was/is the idea of greater individual load capacity with equally improved reliability. This potential differential thus becomes a serious issue for all mobility plans when utilization rates (UTE) and mission capable (MC) rates fall short of expected levels. In Allied Force, the C-17 was a true workhorse and largely responsible for the successful deployment of multinational forces. However, the MC rate for the C-17 was 86.9 percent over the course of the operation, 3.1 percent less than AMC planning factors. Infinitely more critical was the C-5 performance, which achieved an MC rate of 59.4 percent, some 15.6 percent below AMC target.<sup>86</sup> If these deficiencies remain, the earlier described timelines for airlift movement suffer significant extensions. For example, the “Four-Star” analysis would require (under the most generous estimates) at least a 24-36 hour delay for force closure.<sup>87</sup>

Diminished capability of the airlift aircraft was not the only cautionary note from Allied Force. Reflective of the Desert Shield challenges, the Kosovo campaign indicates that a multitude of factors must align for a successful deployment (to say nothing of attempting to make a timeline with little or no slack). One such factor is the capacity of designated APODs and supporting transportation capability. According to the After-Action Report, “the austere transportation infrastructure...in and around Albania limited deployment options and increased deployment timelines. Poor infrastructure conditions

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<sup>86</sup> “Air War Over Serbia Fact Sheet’ (AWOS), 31 Jan 2000, 9.

<sup>87</sup> Considering the proposed 40 C-5s and 43 C-17s of the Four Star Brief for a 6.3 day closure, the Allied Force MC rates would alter the effective “allocated aircraft” to 34 and 41, respectively. Over the course of six days, this differential results in a minimum estimated shortfall of 2,500 S/TNS, requiring an additional 36 hours (assuming standard crew turn rates and on/offloading times).

slowed aircraft turn-around times...and slowed onward movement of forces.”<sup>88</sup> When one considers that in the Gulf War 10 per cent of dry cargo was moved by air and in Kosovo that figure rose to 62.4 percent, this infrastructure issue assumes ever more critical dimensions.<sup>89</sup> Moreover, current wargaming experiments at US Joint Forces Command instruct that, even in attempting to move the leaner, smaller IBCT, the receiving infrastructure has negated several scenarios.<sup>90</sup>

Another critical factor is the nature of the passenger and equipment flow into the theater. Detailed planning for such movement exists in a living document known as the Time-Phased Force and Deployment Data (TPFDD). This flexible plan designates the order of units and equipment for airlift priority as determined by the theater CINC’s desires and TRANSCOM capability. During Allied Force, Task Force Hawk demonstrated the changing nature of the TPFDD. According to the After-Action report, “political and operational imperatives required a significant shift in basing from the Former Yugoslav Republic of Macedonia to Albania.” This necessitated “a large portion of the deployment data to be rapidly reworked.”<sup>91</sup> Though a significantly greater force than the proposed IBCT, TF Hawk demonstrates that “a pre-planned TPFDD is never achievable.” A similar demonstration of this phenomenon occurred during Desert Shield.

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<sup>88</sup> Kosovo/Operation Allied Force, After-Action Report, Report to Congress, 31 January 2000, 37. Noteworthy is that Allied Force used three primary APODs as opposed to the previously discussed six-APOD scenario.

<sup>89</sup> Figure presented by General Charles Robertson, CINC, USTRANSCOM in presentation to the Air Force Association Conference, December, 1999.

<sup>90</sup> Telephone interview with Mr. Steve Dexter, JFCOM logistics division, 24 Mar 2000. Mr. Dexter stated “while we seem to generally be able to get the required airlift loads to the region, we simply lack the locations to land it.”

<sup>91</sup> Ibid, 34. Task Force Hawk was the “buildup of NATO ground combat power” that included an Apache helicopter brigade and additional support and armored forces. In all,

For example, “between 13 and 16 August 1990, the 82d Airborne Division priority dropped from first to thirtieth; and one day CENTCOM changed its airlift priorities seven times.”<sup>92</sup> In addition, during the first three days of September, “the 101<sup>st</sup> cancelled twenty-eight C-5 and twenty-five C-141 missions.”<sup>93</sup>

The relevance of these two examples is that even with conceptual plans for the IBCT movement, and allowing the assumption of a definitive initial airlift priority, circumstances may require alterations to the unit movement. Political and operational shifts in a contingency are not subject to the same structural timelines of an airlift movement. For example, a political imperative might change, forcing a dramatic shift in military operational tasks, requiring new or different forces (specifically those not on the schedule at the time). Indeed, even with a rapid schedule (96-hours), the theater landscape may change significantly, thus upsetting the original deployment plans. It is thus historically *dangerous to equate airlift capability with operational dependability*. Nevertheless, if the IBCT deployment achieves a solid planning schedule to meet Gen Shinseki’s goal, then at least an initial, rational TPFDD is possible. As in every deployment of the last decade, however, the likelihood of the initial plan surviving the evolving operational scenario is questionable.

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the movement required 2,253 sorties involving 10,311 passengers and 26, 957 S/TNS (from AWOS Fact sheet).

<sup>92</sup> Philip A. Bossert, Maj, USAF. “Strategic Airlift Inefficiencies from Desert Shield to Vigilant Warrior,” Command and General Staff College thesis, Ft. Leavenworth, Kansas, 1995, 37. The case of the 101<sup>st</sup> AD adds another challenge to deployment planning. As Col Robert Owen stated in Air Power Journal, Fall 1995, “what planners fail to say, and what most studies don’t consider is on-going operational support [for other operations]...They also don’t consider where the forces are when the operations kick off.” In short, the 101<sup>st</sup> cancellation of sorties translates into substantial airlift assets subsequently being out of place to initiate other airlift movement, which, in turn, increases the subsequent deployment timeline.

## Current and Future Airlift Potential

*You can make a plan against a scenario, but you never fight the war you create the scenario for.*

—Gen Walter Kross

The 1997 National Military Strategy (NMS), identifies the “foremost task” for armed forces planning is that of “detering and defeating aggression in two distant and overlapping MTWs.”<sup>94</sup> Although there is debate within the mobility community regarding planning airlift requirements based on peacetime or contingency needs, the Air Mobility Command currently strives to fulfill these requirements as prescribed in the NMS. This two-MTW focus has resulted in an assessed need for mobility forces to reach 49.7 M/TM each day.<sup>95</sup> The force structure that results from this identified requirement is conceptually one that has the capability to meet the airlift needs of smaller scale contingencies. Theoretically, this appears sound—airlift for two major theaters would logically include that for smaller efforts. However, the “M/TM” figure is an aggregate measure of airlift capacity used as a “top-level comparative metric only.” In short,

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<sup>93</sup> Ibid.

<sup>94</sup> National Military Strategy of the United States of America. “Shape, Respond, Prepare Now: A Military Strategy for a New Era,” Joint Chiefs of Staff, Washington, D.C., 1997, 30. It is also of note that as of this writing, the recent National Defense Panel “Phase-II” report (released May 2000) took issue with reliance on the two-MTW for force structure considerations. However, even if the DoD discarded this strategy, it would not necessarily resolve the disparate lift requirements for SSCs vice MTWs, as the remainder of the chapter will argue.

<sup>95</sup> This figure appears in nearly every mobility document. One example is the Mobility Requirements Study, Bottom-Up Review, 1995. Though this figure is currently under review (Mobility Requirements Study 0-5), at present it continues to be the driving figure for total airlift planning factors. In addition to cargo aircraft, the targeted figure requirements include a reliance on CRAF and designated KC-10 aircraft.

M/TM “ignores the wide range of potential contingencies and the requirements for timing, unit integrity, systems interactions and infrastructure constraints.”<sup>96</sup>

The result of such planning focus is often a dichotomy between MTW and SSC needs. The requirement, for example, to move S/TNS into austere fields is not necessarily included in an ability to meet the M/TM strategic movement. Thus, even if TRANSCOM can match the airlift requirements of the NMS, there remain significant challenges for SSC settings. One of the greatest of these, in light of the IBCT discussion, falls under the auspices of Joint Vision 2010 “Dominant Maneuver.” In this document, dominant maneuver allows the United States “to apply decisive force to attack enemy centers of gravity at all levels of war and compels an adversary to either react from a position of disadvantage or quit.”<sup>97</sup> This is no less an objective in a SSC than it is in a MTW. Indeed, “dominant maneuver” is one of the principal strengths of the IBCT. However, in order to achieve this battlefield dominance, the IBCT must arrive rapidly and with unit integrity, which is the primary objective of air mobility combat delivery.

Combat delivery holds the key to IBCT deployment. In Joint doctrine, it is defined as:

The strategic air movement of cargo or personnel from an airlift point of embarkation to a point as close as practicable to the user’s specified final destination, thereby minimizing transshipment requirements.<sup>98</sup>

The AMC Strategic plan adds that combat delivery is the “preferred method of delivery” for forward operating combat forces in order to achieve the “element of surprise and/or superior maneuver.”<sup>99</sup> Together, these definitions parallel IBCT operational concepts of “high mobility,” “strategically responsive,” “early entry, decisive force,” and “effective

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<sup>96</sup> Air Mobility Strategic Plan 2000, section 2.4.1.

<sup>97</sup> Joint Vision 2010, 20.

<sup>98</sup> Joint Publication 4-01.1, *JTTP for Airlift Support for Joint Operations*, 20 July 96, GL-3.

<sup>99</sup> AMC Strategic Plan 2000, section 2.2.3.1.2.

combat operations immediately upon arrival.”<sup>100</sup> It is thus noteworthy that the AMC strategic plan identifies current “combat delivery” equipment as possessing “poor or no capability with significant deficiencies and no funding and/or no solution identified.” In the “short term” (2002-2007), this situation only slightly improves to “partial capability.”<sup>101</sup> Additionally, the critical associated capability for combat delivery—cargo aircraft—is assessed as remaining in a “poor or no capability” condition for the next seven years.

To be sure, these estimates are based upon an assessment of capabilities for MTW and some specialty mission requirements. However, the serious airlift deficiencies likely to exist over the next five to seven years directly impact AMC’s ability to effectively meet MTW needs, and in the same way, support smaller contingencies. Indeed these airlift shortfalls become more dramatic each fiscal year. As an example, the programmed retirement rate for the C-141 is nearly double that of the C-17 accrual. In less than a decade, this translates into a decrease of aircraft “tails” from 392 to 261.<sup>102</sup> The functional effect of this change is dramatic. AMC estimates that for Fiscal 00, the airlift capability of military aircraft is approximately 26.21 MTM/D (with 100 percent participation from Reserve and Guard forces).<sup>103</sup>

Accompanying this “loss of flexibility” (with reduced assets) is the diminished en route support structure for airlift movement. In the last nine years, AMC’s en route system fell from access to 45 permanent locations and over 5,500 manpower

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<sup>100</sup> The Full Spectrum Brigade, 4-6.

<sup>101</sup> AMC Strategic Plan 2000, “Executive Summary,” Figure 4, 9.

<sup>102</sup> HQ AMC/XPXPL “Strategic Airlift Capacity,” Force structure FY 1996-2015 Informational Planning Sheets. The figures are also addressed in the MC Strategic Plan 2000, Section 2.4.1.

<sup>103</sup> AMC Strategic Plan 2000, Section 2.4.1 “Cargo Airlift,” Figure 12—Strategic Airlift Capacity. The text adds that this figure is “based on objective UTE rates and programmed MC rates and does not account for our current MC rates.” In other words, the figures are conceptual, and given the lesser MC rates (addressed earlier) the figure is actually smaller.



authorizations, to only 12 locations with less than 4,000 people.<sup>104</sup> This means there are fewer en route options for strategic movement and substantially fewer personnel and less equipment already at forward stations. This complicates contingency response by necessitating movement of support (personnel/equipment) from CONUS to an area of operation, rather than merely deploying into theater via intratheater airlift in advance of the strategic movement. Thus, the two critical pillars of AMC's capacity to move an IBCT unit rapidly—aircraft numbers and en route infrastructure—have experienced tremendous decreases that may indicate such movement as impractical.<sup>105</sup>

### **After the 96-Hours**

The erosion of the mobility 'pillars' discussed above has deeper ramifications for the IBCT beyond meeting initial lift requirements. Among the additional considerations are the effects wrought on the logistics of resupply to the brigade in the field and the capability for mobility forces to withdraw the unit. This latter idea has two scenarios—withdrawal for re-employment elsewhere in the theater or extraction from an untenable situation. In each of these challenges, the reduction of mobility resources creates dilemmas warranting further consideration before the IBCT is operational.

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<sup>104</sup> Ibid, Section 2.4.1.

<sup>105</sup> Anyone well versed in mobility issues will note the simplification of this discussion. As this essay seeks to establish the viability of current/planned movement for an IBCT, comprehensive depth in specific MC deficiencies is not warranted. In the interest of remaining focused on the IBCT issue, discussions on such issues as materials handling equipment (MHE) and crew ratios have been intentionally omitted. The Strategic Plan addresses the totality of mobility issues and is an appropriate starting point for those interested in further exploration.

## **Logistics/Resupply**

The Organizational and Operational Concept paper (O&O) for the IBCB addresses the issue of force sustainment, however the propositions offered generate substantial questions. For example, the O&O suggests that battlefield distribution “combines superior situational understanding with efficient air and surface delivery systems to form a seamless pipeline.” It includes exploitation of “regionally available assets for...transport, supply and services to the maximum extent possible, including joint, multinational and contracted support resources.” Ultimately, however, this brigade remains heavily reliant on air assets for resupply—particularly during the first two weeks of employment.<sup>106</sup> In the realities of airlift capability, this resupply of approximately 250-300 STNS/day translates into 6-8 C-17 loads.<sup>107</sup>

Purely on numerical analysis, this airlift resupply is plausible. The relatively few “tails” required makes possible a rapid delivery. Yet the question arises as to similar plausibility in hostile environments. Location thus plays a critical role in the logistics formula. If the airlift can be accomplished at or near the forward edge of a battlefield, and faces no opposition to landing, then the resupply is effective and probable. However, once this delivery is required more than 10-20 miles beyond friendly main forces/secure APODs, the effort becomes problematical. In essence the airlift becomes a project of

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<sup>106</sup> The Full Spectrum Brigade, 36-38.

<sup>107</sup> Approximately 20 C-130s would be required for the same resupply. The figure estimated is drawn not only from the O&O, but other proposals for comparatively sized units. See Douglas A. Macgregor’s Breaking the Phalanx: A New Design for Landpower in the 21<sup>st</sup> Century, also RAND Corporation’s Ground Forces for a Rapidly Employable Joint Task Force.

“dense airland delivery” at a place beyond surface transportation support and with the requirement of additional offloading personnel to effect an expeditious delivery.<sup>108</sup>

Since a tenet of the IBCT is rapid, unpredictable maneuver, reliance on existing airfields in this scenario would risk violation of the underlying employment strategy. Thus, as the IBCT maneuvered, “dense delivery” would necessitate the construction of at least an austere landing facility—such as a three-thousand-foot long and 90-foot wide strip. This is the *sine qua non* for airland resupply, even with the exploitation of all of the C-17’s capabilities. Assuming that such strips are available, it still remains questionable whether the aircraft could penetrate any enemy mobile air defense systems and/or land and depart without sustaining loss or damage. Thus, the risk to the IBCT’s lifeblood supply—particularly fuel and ammunition—might quickly and unexpectedly reach a point of gravity that threatens the existence of the unit.

These considerations pose real and disturbing parallels to logistical failures of historical enterprises. Perhaps one of the most dramatic of these was the defeat of Napoleon’s army in the 1812 campaign against Russia. B. H. Liddell Hart observed that Napoleon strove to “multiply mass by velocity both strategically and tactically.” This, he achieved by “moving light” enabling speed and maneuverability in varied terrain.<sup>109</sup> Although he unquestionably recognized the materiel challenges to be faced on a march to Moscow, Napoleon did not sufficiently contemplate the depth of reliance his plan placed

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<sup>108</sup> “Dense airland delivery” is a concept advanced by Col Robert Owen, of the XOP division of Air Mobility Command (via telephone interview, 28 March 2000). Col Owen argues that airlift resupply beyond 10 miles changes the effort into a fundamentally different requirement, one that he suggests the USAF is not currently suited to meet nor one that is executable without impractical risk.

<sup>109</sup> B. H. Liddell Hart. Strategy (New York: Meridian, Penguin Books, 1991 [second revised edition]), 94-95.

on securing replenishment for his troops and supply train. Subsequent “friction” in the combination of sickness, scarcity of resources on the land and dramatic climatic changes introduced tremendous strain. Moreover, the Russian “strategy of evasion”—avoiding direct confrontation and focusing primarily on quick strikes—ultimately spelled disaster by forcing Napoleon to continuously seek the enemy—only adding to his already-strained logistics.<sup>110</sup> In like manner, the IBCT concept places tremendous reliance on a single source of replenishment in the early part of a conflict—that of airlift. Thus it is imperative to consider the ramifications of the failure of this sole conduit. For that which proved capable of frustrating an entire army is equally capable of devastating a brigade.

One of the most dramatic examples of this single-supply source hazard occurred over a hundred years later with the Allies’ Mediterranean campaign in WWII. As Rommel’s *Heeresgruppe Afrika* found itself contained in Tunisia, allied efforts began concentrating on the shipping lines of communication, which formed the lifeline for the Axis’ African survival. Though not completely eliminating the resupply, the Allied effort eventually negated any Axis offensive options. Rommel’s situation became untenable (even before he was ultimately recalled to Germany to avoid capture). In effect, the *Heeresgruppe* reached a point where supply did not cover consumption which, less than a month later, meant the force did not have the fuel and ammunition to combat the Allies’ final offensive.<sup>111</sup>

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<sup>110</sup> Ibid, 120.

<sup>111</sup> *Oberquartiermeister, Deutsche-italienische Panzerarmee Afrika*, to *Oberkommando des Heeres*, Feb 13, 1943, as quoted in Eduard Mark’s *Aerial Interdiction in Three Wars* (Washington, D.C.: Center for Air Force History, 1994), 45. See also Martin van Creveld’s *Supplying War: Logistics from Wallenstein to Patton*, (Cambridge; Cambridge University Press, 1977), 181-201. Van Creveld adds that Rommel’s supply problems

A year later in Italy, the Axis forces would face similar supply destruction at the hands of Allied airpower. In Operation STRANGLE, Allied attacks on vulnerable rail lines forced the enemy once again to rely on a single line of communication—this time trucks on roads. Through a “redundant and durable road network” the Germans managed to maintain a flow of supply during the night hours. However, this proved insufficient “to provide for both current consumption and adequate stockpiling.”<sup>112</sup> Thus, when the Allied offensive for Rome (Operation DIADEM) began a few months later, the Germans had already experienced sufficient supply disruption to facilitate Allied victory.

To be sure, supply was not the sole discriminator of defeat and victory in the African and Italian campaigns. However, regardless of the impact one assigns to interdiction in the allied victory, it nevertheless hastened the pace of allied advances. Moreover, the implications for an infinitely smaller setting, as with the IBCT, only magnify the impact of supply interdiction for two main reasons. First, relying on a handful of aircraft for supply means that the loss of just one result in a significantly greater impact than would occur supplying a division or army with ten times the number of aircraft. Second, although the IBCT conceptually covers a disproportionate amount of battlespace relative to other historical units, the total amount of space is still limited.<sup>113</sup> Thus, it is significantly more probable that an enemy could find the resupply location and

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were exacerbated by the limits of the North African ports and the commensurate difficulty in protecting the restricted line of supply convoys.

<sup>112</sup> *Aerial Interdiction*, 178.

<sup>113</sup> Reconnaissance and surveillance enable both maneuver and fires for a unit over a given set of territory. The IBCT’s effective operating area of 50 x50km is tremendous improvement over the *division* coverage of past army forces. Compare: WWII (7 x 21), Korea (21 x 21) and the Reorganization Objective Army Division (ROAD) of the early 1960s (25 x 70). For further comparisons see “Restructuring the Division: An Operational and Organizational Approach,” *Military Review*, May-June 1998.

concentrate his efforts on its disruption despite the IBCT's rapid and unpredictable maneuvering. This would ultimately diminish not only the fundamental viability of the unit—rapid, lethal movement—but also its ability to fight.

## **Withdrawal**

The above examination leads one to the inevitable exploration of perhaps the most important question about the IBCT concept: How does the brigade exit an untenable setting? Indeed, it is axiomatic that force employment strategies have viable plans for inevitable reversals of fortune. The great military theorist, Carl von Clausewitz, noted that military theory “must therefore study the engagement in terms of its possible results.” Addressing the possibility of suspension of action, Clausewitz observed “the determinant is really the same for both commanders: the probability of improvement, or deterioration, of the situation in the future.”<sup>114</sup> Baron Antoine de Jomini made even more cautionary statements regarding the challenge and planning of withdrawal, identifying retreats as “certainly the most difficult operations in war.” He continued, “the only rules to be laid down are, not to permit your army to be closely pressed upon, to deceive the enemy as to the point of passage, and to fall headlong upon the [force] which bars the way.”<sup>115</sup>

These observations may appear intuitive, but without considerable planning their execution may prove disastrous. Failure in battlefield withdrawal, particularly in the face of superior enemy fires leaves the lesser force with few options but surrender or

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<sup>114</sup> Carl von Clausewitz. On War, edited and translated by Michael Howard and Peter Paret (Princeton: Princeton university Press), 177 and 216, respectively.

<sup>115</sup> Baron Antoine Henri de Jomini. The Art of War, reprint of 1862 English translation (J.B. Lippencott & Co., Philadelphia) by (London: Greenhill Books, 1992), 230 and 245, respectively.

annihilation. It is thus significant to note that to date, there is no available information on how the Army plans to answer the question of brigade withdrawal. The O & O offers only one possible scenario for “ambush,” yet the reference is merely for a motorized infantry platoon, not any larger proportion of the brigade. The platoon, when ambushed, will have its squads “react in accordance with battlefield drills to: escape the kill zone; attack mounted; or use the ICV for return fire while shielding squad members as they dismount to commence fire and maneuver.”<sup>116</sup>

Even in this minor engagement (as a percentage of the total brigade), escaping the kill zone would undoubtedly be problematical. If the encounter involved a substantially larger percentage of the IBCT, the questions of how and where to “escape” test the validity of the brigade for proposed employment. Indeed, as the IBCT requires tremendous lift to bring it to the battlefield, it is reasonable to assume that similar lift is needed for withdrawal. Even if equipment were abandoned (in an emergency escape) the lift requirements for even a third of the personnel make the concept impractical (even with the assumption of a serviceable landing strip). Resupply into hostile areas is a considerable, if not costly, challenge. Airlifting retreating troops under active fire is a similar, yet significantly more dangerous, endeavor.

## **Summary**

This chapter began with an examination of current proposals for the IBCT movement. As the nature of the unit’s deployment warrants movement exclusively through airlift assets, the estimated tonnage and personnel are appropriately translated into C-5 and C-17 allocation. Although the absolute structure of the IBCT remains

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<sup>116</sup> O & O, 27-28.

unclear, the approximate requirements are not likely to diverge too far from these proposals; and a significant reduction of IBCT airlift needs would require currently unforeseen weapons and systems developments. Therefore, applying the estimated allocation to current and near-term AMC capabilities arguably results in an accurate prediction of feasibility. Unfortunately, such a comparison highlights numerous roadblocks to current IBCT force projection. However, just as many of the AMC figures are subject to alteration when introduced to the reality of actual employment, so, too, might the capability to meet the 96-hour timeline (and subsequent supply and withdrawal) find workable adjustment given appropriate priority? The next chapter will answer this potential re-working of existing and competing requirements through an analysis of possible changes in Department of Defense (DoD) programs. If, indeed, the IBCT offers a desirable and significant combat option for America's military, then it is appropriate that a solution for its deployment be sought within the overall DoD structure, rather than simply in the finite composition of the Air Force.



## Chapter 5

### Solving the Lift Equation

*DoD is taking major steps to improve capabilities for rapid deployments...The Main issue is affordability: How to balance the budgets for mobility with the budgets needed for improvements in other important DoD capabilities.*

David Kassing in  
New Challenges for Defense Planning

*We are faced with the challenge of dealing with declining resources even while the need for our mobility service is growing. That means we must be willing to change our way of thinking when old paradigms block our progress...Business as usual will kill us.*

Gen Robert L. Rutherford  
CINC, USTRANSCOM 1994-96

### Introduction

The fact that airlift capabilities cannot yet meet the desired Army IBCT deployment time-line should not kill the issue for the Department of Defense. If the military determines that the brigade is a desirable force, then the issue is solving the mathematical equation underlying the movement of the IBCT. Earlier chapters have described the estimated size and lift requirements of the brigade, as well as the deficient amount of airlift to meet the need. This chapter attempts to resolve the mismatch with an evaluation of fiscal and structural options available for defense planners.

As during every year, current debate about DoD fiscal distribution remains a pliable construct with the embedded flexibility to readjust budget priorities. However, while the Joint Requirements Oversight Council (JROC) was created to guide and ensure appropriate emphasis in military budgets, the overall system is not without flaws. For example, when it comes to certain cross-service structural questions, such as mobility forces, prudent ownership of expenditures is missing. As a 1997 Congressional Budget Study on strategic mobility noted, “No single DoD office is responsible for both analyzing mobility forces and deciding how to spend resources.” The result is that ultimate decision-making falls to committees that “tend toward consensus decisions that provide something for all participants.”<sup>117</sup> In other words, each service walks away from mobility issues with something, while the optimal solution is left wanting.

One reason for this result is that mobility force planning is an unglamorous activity. It is certainly more exciting for military personnel to plan tactical air operations or naval combat. Another explanation stems from the fact that airlift and sealift crews generally provide transportation for the Army rather than supporting their own military service. Thus, airlift and sealift have “until recently been ‘orphans’ within the Air Force and Navy budgets: their advocates have tended to lose institutional battles for funding to missions with higher prestige.”<sup>118</sup> Current examples of this dramatize the reality of the budgetary gap. As the next Quadrennial Defense Review (QDR) approaches in March 2001, each service has begun focused lobbying efforts on one or two programs related to core doctrinal capabilities. Yet, although the Army, Marine and Air Force service chiefs have

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<sup>117</sup> Moving U.S. Forces: Options for Strategic Mobility, CBO Study. February 1997, Congress of the United States, Washington, D.C., 49.

<sup>118</sup> *Ibid*, 49.

made public statements about the critical need for transportation assets, a commensurate primary push from any service to enhance mobility has not been forthcoming.<sup>119</sup>

The reality may be that lift assets are victims of their own success. Although numerous transportation challenges have arisen in deployments from Desert Shield to Kosovo, somehow service requirements were met. Unfortunately, the often-heroic resolution of transportation issues in past conflicts has not translated into awareness at the budgetary table that all military forces require movement, and that such lift is not a “given” capability from TRANSCOM assets. As David Kassing noted in 1994, “deploying units tend to treat lift as a ‘free good’ available in whatever quantity they need.”<sup>120</sup> As operations tempo continues to increase as force structure diminishes, this may get worse, and even heroic effort may not save the day.

Fortunately, there is time to alleviate transportation needs by addressing current force structure in light of the new strategic environment. This is not to suggest that the military should adjust its forces with the frequency of global changes. Rather, despite significant reductions over the last decade, the military has maintained the construct of a Cold War force, including large, heavy Army divisions, naval carrier battle groups and enduring Air Force emphasis on fighter wings. Thus, there may be room for adjustment

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<sup>119</sup> To be sure, the Air Force argued successfully in the last year to acquire 134 C-17s. The need for some aircraft was also acknowledged by the other services. However, this is itself a compromise figure and one that did not significantly threaten any other major military program. The reference in the above text is to the reality of military budget challenges that ultimately pit the individual services against each other for “pet” programs that each branch links to core doctrine. Of late, this has equated to future warfare requirements. And, in particular, the upcoming budget discussion has already begun to focus on the Air Force F-22 program and the Army’s transformation plan. Thus, two not necessarily mutually exclusive concepts end up in an essentially either-or debate. Lost in such a discussion are mobility forces that would be a cornerstone requirement for either project.

among all of the services to allow for a military still capable of winning major wars, but equally viable for the more likely smaller contingencies.

### **Recent Attempts**

The last five years have witnessed several scholarly investigations into various force structure options with the goal of maximizing strategic lift capabilities. Of course these, and indeed the majority of mobility studies, focus on planning to meet the baseline NSS requirement—fighting two, near-simultaneous MTWs. As such, force structure recommendations and overall strategic lift capabilities attempt to answer much broader needs than those for specific mobility challenges like the IBCT. Nonetheless, it is possible to extrapolate applicable concepts for SSC scenarios. Indeed, an underlying current for every analysis is that of answering lift requirements for the complete scale of conflict—from humanitarian relief and peacekeeping to armed conflict and major war. Thus, the following sections will briefly review some of the more noted studies and their suggested lift adjustments for future needs, for it is in this process that possible force structure alterations offer windows of opportunity to create a military more capable of responding to all mobility scenarios, not simply major theater wars.

Before continuing, however, it is important to review a critical shortcoming of two-MTW mobility planning: meeting the needs for two-MTWs does not in itself mean *de facto* meeting those of SSC requirements. On the surface, this statement seems illogical in that having a mobility force for large-scale operations would mean that SSC needs were lesser included. However three factors negate this idea. First, the timeline for deployment of available units for an MTW is significantly different than that for a SSC.

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<sup>120</sup> Paul K. Davis, ed., New Challenges for Defense Planning, 679.

An MTW TPFDD addresses much longer-term movement, which by definition allows for significant employment of sealift assets in deployment.<sup>121</sup> Second, one of many planning differences includes the availability of multiple APODs. In a SSC, the flexibility and options among port and airfield facilities is invariably constrained, adding unique deployment barriers. Simply comparing Desert Shield to Kosovo (as in Chapter 4) reveals a stark contrast. In the former, some 12 APODS and four modern ports were immediately available for troop and equipment movement. In the latter, only three modest APODs were available, which greatly reduced the ability of mobility forces to meet deployment schedules.

Finally, the number of aircraft available—“tails”—highlights another hurdle. With the airlift transformation from nearly three hundred C-141s to less than one hundred and fifty C-17s the theoretical tonnage figure may *increase* for an MTW, while simultaneously *decrease* for a SSC. That is, fewer tails means fewer available aircraft to move equipment within a given period of time. Thus, when coupled with the reality that aircraft often “cube-out” before “grossing-out,” the result is less tonnage moved in a given number of days.<sup>122</sup> These factors, along with the supply and withdrawal considerations of Chapter 4, demand careful examination of structural planning in order to ensure mobility force effect actually increases across the spectrum of conflict or, as a minimum, the risk involved is as low as possible.

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<sup>121</sup> Air Mobility Strategic Plan 2000 states that Military Sealift Command fulfills over 90 percent of DoD’s total transportation requirements. This is a dramatic figure and evidence of the inherent difference from a SSC where historically sealift has contributed either no transportation or, at most, less than 10 percent. See section 2.2.5.

<sup>122</sup> “Cubing-out” as mentioned earlier, refers to reaching the maximum dimensional space of the cargo area prior to “grossing-out,” or reaching the maximum tonnage capability of an aircraft.

## GAO-1997

The General Accounting Office conducted a review of mobility force structure that essentially offered options to the Defense Acquisition Board (DAB) C-17 procurement.<sup>123</sup> At the time of the GAO study, only 80 C-17s were funded, and debate focused principally on a cost-benefit analysis of further C-17 purchases versus alternative acquisitions or strategic lift changes. The resulting determination from the GAO was that the needs of two MTWs could be met with 100 C-17s. While this proposal is already dated with the recent acquisition authorization for 134 C-17s, the logic of the GAO report illustrates the inherent problem with force structure planning focused overwhelmingly on the two-MTW goal.

Three of the most demonstrative aspects of this planning challenge in the GAO findings were the suggestions concerning training aircraft, CRAF, and materiel prepositioning. The GAO noted that current plans are based upon an inventory that is adjusted for designated training aircraft. The GAO report suggests that these aircraft should be considered as they offer significant additional capability. Moreover, the GAO suggested that all of the 59 KC-10 aircraft could be used for strategic lift instead of the planning figure of 37. The problem with the GAO plan was that training aircraft are not necessarily ready for operational use. In fact, many of the aircraft operate with degraded

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<sup>123</sup> “Military Airlift: Options Exist for Meeting the Requirements While Acquiring Fewer C-17s,” GAO, Washington, D.C., February 1997. In this report, the GAO cited the DAB recommendation of 120 C-17s and no commercial aircraft purchases (747s, with a military designation C-33). With the exception of the extended range brigade airdrop mission, this plan suggested airlift needs could be met if the DoD implemented other measures such as increased prepositioning of Army materiel and increased employment of the CRAF. For reference, the DAB findings were based upon the Joint Chiefs’ Mobility Requirements Study, Bottom-Up Review (MRS BURU), AMC’s Strategic Airlift Force Mix Analysis (SAFMA) and the DoD Tactical utility Analysis. See GAO, 3-6.

or missing equipment not required for initial or recurring aircrew training. Thus, there would be a time delay in equipping these aircraft before operational use was possible. In addition, such a plan effectively ends the “pipeline” training of new aircrew, which means that injuries, casualties or the like would have to be met by existing aircrew. Regarding the KC-10 issue, although airlift indeed increases, the addition creates a commensurate loss of available KC-10s for fighter and bomber aircraft movement (in the tanker role). Ultimately, for an SSC this suggestion is not a factor. Although TRANSCOM officials have said that the above options might be exercised in a two-MTW, they would not be planning options for SSCs. Thus, in this case MTW planning exists outside of SSC planning factors.<sup>124</sup>

Another major problem with the GAO’s two-MTW plan of the GAO involves the use of CRAF assets. Citing a program that is “more robust than assumed in the Mobility Requirements Study, Bottom-up Review (MRS BURU),” the GAO report suggested that CRAF might be considered to fulfill “contingencies or other priorities” that require planners to hold some military aircraft in reserve, even in a two-MTW.<sup>125</sup> Again, though perhaps a consideration for MTW scenarios, such a plan is unlikely for an SSC on two counts. First, CRAF was called upon only during the Gulf War, not in any subsequent contingencies. Indeed, CRAF is an option that military planners are reluctant to turn to, given the required government initiation<sup>126</sup> and the desire to reduce the amount of times

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<sup>124</sup> GAO Report, 26. The TRANSCOM citation and entire GAO argument on training aircraft is found on pages 26-27 and 29-30.

<sup>125</sup> GAO, 27.

<sup>126</sup> CRAF is initiated incrementally in three stages by the TRANSCOM commander with Secretary of Defense approval. It is to the approval process and subsequent initiation that the above comment refers.

CRAF is called upon to maintain civil interest in the program.<sup>127</sup> Again, this is largely an MTW consideration. Even if CRAF were used for SSCs, the availability of significant civilian aircraft occurs only after at least a 24-hour period (optimum). Adding the initiation process time (a day or two), CRAF is essentially eliminated from consideration for less-than-a-week deployment timelines, especially for a 96-hour objective required by the IBCT.

A final consideration stemming from the GAO report is the addition of prepositioned assets. Afloat prepositioning is a flexible means of transporting materiel to where it is needed in a contingency. Ships loaded with combat and support equipment are either located or moved close to potential trouble spots, expediting the arrival into theater. Citing the MRS BURU report, the GAO study similarly recommended an increase in afloat prepositioned materiel. While acknowledging that prepositioned materiel reduces the flexibility of a theater commander to adjust the planned flow of equipment into theater, the study noted that turning to airlift assets to fill the tonnage shortfall would require costs that did not warrant the “limited increase in flexibility.”<sup>128</sup> In the Department of Defense rebuttal, this additional reliance on prepositioning was deemed

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<sup>127</sup> See Conduct of the Persian Gulf War E-5-E-8, CBO Study “Moving U.S. Forces,” Appendix B, 83-85. Also, during a 22 March 2000 presentation to the Maxwell AFB Airlift Tanker Association on the future of Air Mobility, General Tony Robertson, CINC TRANSCOM identified that “going to the well” of CRAF is functionally something TRANSCOM tries to avoid as well as keeps at minimal levels for planning purposes. This, he said, was in large part due to the necessary caution involved with depending on civilian contribution to military contingencies. Although contracts exist, there are invariably questions about aircrew protection and safety for given employment of civilian carriers. This is also addressed at length in the CBO Study.

<sup>128</sup> GAO study, 26. The GAO argued that in order to address the 4 percent materiel shortfall in a two-MTW (drawn from MRS BURU analysis), deferring to a 120 C-17 inventory would come at a “significant increase in cost” over the accepted delays and loss of flexibility with increased prepositioning.



“undesirable” for two reasons. First, a CINC’s flexibility would be unwisely restricted in that the composition of more of his equipment would be predetermined. Second, the DoD response noted “almost all of the equipment suitable for prepositioning has been prepositioned.”<sup>129</sup> Moreover, prepositioning increases risk in that the locations chosen (either afloat or on land) may not be where the equipment is needed. Although land-positioned assets could be moved in a contingency response, necessary airlift will not likely be in place, incurring delays for the movement. In addition, the host nation of these assets might not readily agree to their movement or employment in the desired contingency. Finally, although with sufficient strategic warning afloat assets might be dispatched closer to the theater, the ships are slow moving and necessary ports or expeditious sea routes might not be available.<sup>130</sup>

In a related part of the study, the GAO concluded that delay in movement of one or two days were essentially negligible. While this may be arguable for a MTW scenario, it is fundamentally counter to rapid deployment in an SSC setting. Specifically, the IBCT relies on swift deployment of intact units in order to seize initiative (or at least wrest it from the enemy), while also expanding combat maneuvering options. In such a setting, even a one-day delay might negate the effectiveness or the survivability of the unit. Thus

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<sup>129</sup> GAO study, 54.

<sup>130</sup> CBO study, 26. In a much more comprehensive study, the CBO discussed at length the strategic mobility assets. With regard to prepositioning ships, the CBO noted that sealift ships are given a “readiness designation.” As an example, the study notes that before the Gulf War, most ships in the Ready Reserve Fleet (such as those with Army equipment in Diego Garcia), were kept in a 5, 10 or 20 day readiness status. Significantly, “during that deployment, many RRF ships took longer to activate than the DoD had planned.” For a complete discussion, see CBO Chapter 3 “Strategic Sealift Forces.”

either method of prepositioning creates untenable risks for rapid deployment operations in an SSC.

CBO 1997

At the same time as the GAO Study, the Congressional Budget Office (CBO) made its own exploration of conceptual plans for meeting strategic lift needs. While similarly addressing the two-MTW planning objective, the CBO study made significant reference to other transportation demands outside of MTWs. As such, the study offers a more realistic approach to overall mobility requirements for the military.

The CBO study offered five options that were compared to each other as well as to the Clinton Administration's plan at the time. The differences between the options focused on buying various numbers of C-17s and on establishing varying degrees of prepositioned assets—both afloat and on land. Ultimately, after describing each of these plans at length, the study concluded that balancing the risks and costs of each “depends on the likelihood that the United States will become involved in major or smaller regional conflicts, as well as whether U.S. forces will need to perform special airlift missions.”<sup>131</sup> In that statement, the CBO offered sage advice for mobility force structure planning that is equally relevant now, three years later.

Although many of the options of the study fail to pass muster when examined under rapid response to SSCs, one plan offers a potentially satisfying match for MTW and SSC needs. Identified as “Option IV,” this plan suggests acquiring a total of 140 C-17s and forgoing an additional prepositioning ship.<sup>132</sup> Such an airlift structure “would provide the Air Force with the upper end of its desired range for theoretical airlift capacity—nearly

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<sup>131</sup> CBO, 75.

52 MTM/D by 2006.”<sup>133</sup> The primary drawback to this option is depicted as additional costs—approximately \$6.3 billion through 2020 more than the Administration plan. However, though the study recognized that additional purchases would lower the cost of each plane, the CBO figures for acquisition are still approximately \$35-50 million more than recent cost estimates. Thus, the \$6.3 billion figure, in new contract costs, would be reduced by approximately \$1-2 billion.<sup>134</sup>

Aside from cost, the options were evaluated on a number of other functional mobility characteristics. Significantly, the “Option IV” plan proved advantageous in nearly all of these. In theoretical airlift capacity, this option offered the greatest capacity while simultaneously relying the least on additional CRAF assets. In terms of “deliveries during the halting phase,” “Option IV” performed comparatively worst among the alternatives—primarily because with less prepositioning (ships) the plan would result in 2,400 fewer tons after the first 20 days of deliveries.<sup>135</sup> However, this analysis may be deceiving. First, the current plan to address C-5 engine modernization was not

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<sup>132</sup> The 140 number compares to the currently funded 134 C-17s under FY 2001. At the time of the study, however, the DoD had funded only 48 C-17s.

<sup>133</sup> CBO, 65. This 52 MTM/D figure stems from mobility analysis of the increasing 2-MTW requirements over the next 5 years. In large measure, this increase (from common reference 49.7 MTM/D) is a reassessment based on the fact that the overall weights of Army units have increased. For example, between 1987 and 1994, a notional mechanized division weighs “49 percent more” according to Army TOE. (See page 81 for other unit changes).

<sup>134</sup> According to General Robertson, the 2000 agreement, which included 134 funded purchases (total), resulted in a per-copy cost of around \$190 million. Mr. Dave Merrill stated that annual operations and maintenance costs for these aircraft are \$15.4 million per active duty aircraft, and \$9.8 million per unit equipped guard or reserve aircraft. Thus, the CBO figures between \$230-250 million in acquisition costs would approximately equal the total costs—purchase and operations—not merely the initial acquisition. Additionally, future purchases (beyond the 134) may find a per-unit cost as low as \$150 million, according to David Fulghum in *Aviation Week and Space Technology*, 6 March 2000, page 27.

considered during this study. A significantly higher reliability rate for the C-5 (expected with the completed re-fit) would thus greatly reduce the 2,400 figure. Second, though less total tonnage is moved in an MTW, nearly ten thousand tons more than any other plan is moved by air in the same initial 20 days.<sup>136</sup> Thus, when considering applicability for all types of conflict scenarios, the airlift figure becomes more important than the overall movement. That is, as discussed earlier, SSCs often require near complete movement by air to meet tighter time-lines. Moreover, the “first 20 days” may often prove to be nearly half of a conceivable scenario’s total time-line, thus the amount of airlift capability in the first two weeks becomes the single most important factor. Of course, with regard to the IBCT, this number shrinks to airlift in the first *four* days.

With regard to “vulnerability to enemy attack,” “Option IV” again survived as the best alternative. Although conceding that an enemy would likely target both airfields and ports, the CBO suggested, “alternatives that include more airlift might be somewhat less vulnerable.”<sup>137</sup> This is due to the fact that most regions of the world have more airfields than ports. Thus the calculus for an enemy targeting plan becomes significantly more complex given the uncertainty of which airfields deploying forces may use. Additionally, the tremendous amount of concentrated materiel on a prepositioning ship would offer a more lucrative target than even several airlift aircraft.

In the conclusion, the CBO acknowledged that although costing more, “Option IV” would offer the distinct advantage of allowing for the conduct of a wider range of smaller deployments or special airlift missions “with more confidence.” However, as the study

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<sup>135</sup> CBO Study, 71.

<sup>136</sup> Ibid, 71.

<sup>137</sup> Ibid, 73.

concluded, “whether those advantages are worth the considerable cost of the C-17 depends on whether decision makers believe that DoD is likely to need to perform those tasks or to require the flexibility...in the years ahead.”<sup>138</sup> Given the changes in the international security picture discussed in Chapter 1 and the apparently unchanging propensity of the administration to engage more frequently in SSCs, that “flexibility” seems warranted. With the additional consideration of the Army’s transformation, including the IBCT and its future “objective” force, the need for a plan such as “Option IV” appears even more relevant. Indeed, should the Army forces achieve the proposed leaner and lighter structure under Gen Shinseki’s “vision,” the overall tonnage requirement for an MTW will decrease, which further reduces the one drawback to the plan (cargo in the first 20 days). At the same time, lighter Army units will offer theater commanders enhanced flexibility given the opportunity to maximize the opportunities of a more robust airlift fleet. Thus, plans such as “Option IV” that advocate additional C-17s despite the additional costs work in complementary fashion to the needs of MTWs and SSCs.

### **Finding the Funding**

Both the CBO and the GAO studies illustrate that planning force structure based on a 2-MTW scenario fails to fully address the smaller, rapid deployment operations that the Army desires. Thus the only viable option to meet the timeline demands of the IBCT and future units is to expand the airlift fleet. By increasing the number of “tails,” the Air Force can more realistically approach the IBCT mobility challenge, while at the same

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<sup>138</sup> Ibid, 75. “Special airlift missions” here refers to the need for the specific airframe capability currently diminishing with the loss of the C-141, namely; long-range airdrops, intratheater deliveries and direct deliveries.

time enhancing its capability to match the 2-MTW requirements. The net result is not a stronger, more endowed Air Force, but rather a significantly more capable U.S. military.

Yet despite the fact that C-17 purchases have increased since the two studies, the projected inventory still fails to meet the growing mobility needs of the Army and the armed services as a whole. It is therefore imperative that budgetary solutions redress these lingering airlift shortfalls. The inevitable question is where will the money come from? Naturally, no ready source of funding appears available. The primary path would, of course, be an increase in the top-line of the Department of Defense budget. Though it is possible that some additional funding will be forthcoming in this manner, it is unrealistic to expect the budget to receive the total amount required for substantial C-17 purchases and C-5 enhancements. Given the current emphasis on retention programs, the lion's share of any DoD budget increases may be designated for these issues. As health care improvements alone are likely to cost upwards of \$100 billion over the next five years, there is little room for airlift increases through congressional outlays.<sup>139</sup>

The fact remains that federal discretionary spending will continue to face challenges and reductions in the coming years. Indeed the balanced budget plan for 2002 assumes a zero growth in real defense spending. As Michael O'Hanlon of the Brookings Institute explained in 1996, "if the defense department took its proportionate cuts [in discretionary

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<sup>139</sup> Hearing of the Senate Appropriations Committee, 2 May 2000, (C-Span television taping and transcript). Though a wide range of DoD issues were discussed, the preponderance of committee interest was in health care and missile defense. The figures mentioned above were cited by Sen Ted Stevens and expanded on by General Hugh Shelton and Secretary of Defense William Cohen. Significantly, on the issue of airlift Gen Shelton stated that on-going study was examining the best course to meet airlift shortfalls "by either buying more C-17s or refitting/repairing the C-5A fleet." The study he referred to is the MRS-05, however it is noteworthy that the General offered the options as either-or, rather than both purchases **and** refitting.

reductions] the real defense budget would have to be cut by another \$40 billion a year.”<sup>140</sup> Moreover, despite the potential with current budget surplus monies, even a slight decline of the robust economic growth rate anticipated would drastically reduce these additional funds, thus placing renewed congressional emphasis on defense spending reductions to meet a balanced budget.

In 1997, then Air National Guard Colonel Ron Bath approached these fiscal realities with a re-examination of military force structure. Due to the fact that defense strategy calls for increased emphasis on halting enemies and shaping conflict through joint airpower, Bath questioned the military’s substantial investment in active-duty manpower. He saw parts of the active-duty and retirement payrolls as unnecessary expenditures which could endanger critical future investment: “if a nation continues to protect manpower-intensive forces in excess of requirements, future demands on defense dollars could squeeze out funding for modernization that is necessary to capitalize on the revolution in military affairs.” Moreover, Bath identified that the QDR and National Defense panel (NDP) proposals left the Total Army with a force structure “that is neither explained by nor fully employed in the current defense strategy.”<sup>141</sup> Thus, Bath’s objective was to “re-examine the blend of manpower and firepower in the current defense

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<sup>140</sup> Michael O’Hanlon, Defense Planning for the 1990s. (Washington D.C.: The Brookings Institution, 1996), 4.

<sup>141</sup> Ron Bath, Col, ANG, with Dr. Rebecca Grant. “Airpower and the Total Force: The Gift of Time,” (Arlington, VA: IRIS Independent Research, 1998), 4. This text is also available in CD-ROM format under the same publication. The ideas of the brief were initiated by Colonel Bath in 1997, and have been expanded/further researched by Dr. Grant and others. The issue paper appeared as part of the “Next American Century Series” whose charter is to “stimulate discussion on topics that affect the security and economy of America in the 21<sup>st</sup> Century.”

program” so as to meet future military requirements more effectively under limited defense budgets.<sup>142</sup>

The legacy of 20<sup>th</sup> Century strategy is that of a requirement for a preponderance of manpower. As Dr. Grant explains, “the confrontation of military forces in Europe, Korea and elsewhere demanded forces that were in place and prepared to fight at a moment’s notice. The timetable for meeting the threat allowed no margin.”<sup>143</sup> Current joint warfighting doctrine still envisions ground-force maneuver, supported by joint fires in order to consolidate gains and secure objectives. Indeed this is still at the heart of the IBCCT engagement plan. Yet Dr. Grant points out that the trends in warfare may allow an adjustment to this philosophy, thus altering the balance between manpower and firepower. Specifically, Dr. Grant offers that future projections of manpower requirements “do not take completely into account the ability...of joint airpower to shape the conflict and, to a great degree, control the timing of the use of ground forces.”<sup>144</sup>

This last idea is at the core of the latest “Halt” doctrine that depends on airpower as the supported or primary force in early phases of the conflict. The “culminating point” of the engagement thus comes earlier in the conflict as initiative is stripped from the enemy. The net effect is that as the enemy is contained, “building up of substantial ground forces for a counter-offensive becomes one of the CINC’s options, instead of a default requirement.”<sup>145</sup> The CINC can then determine the best course of action—from continued airpower strikes to debilitate the enemy, to introducing additional ground forces. This is the “gift of time” offered by Bath. For it is in the ability of airpower to

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<sup>142</sup> Ibid, 7.

<sup>143</sup> Ibid, 9.

<sup>144</sup> Ibid, 17.



contain the enemy that necessary training and preparation time for guard and reserve forces becomes a viable option. The immediate need for troops to enter a second MTW setting thus decreases and allows for the employment of non-active units who have more lengthy pre-deployment schedules than their active counterparts.

Significantly, the National Defense Panel identified the opportunity within the Army for improved integration of active and reserve forces: “While other services have successfully integrated their active and reserve forces, the Army has suffered from a destructive disunity among its components.”<sup>146</sup> What this means in terms of fiscal benefit is that an increased reliance on guard and reserve troops offers the opportunity to reduce the active structure, resulting in substantial savings over time. For example, in constant 1997 dollars, an estimated \$34 billion lifetime savings is achieved with the conversion of 10,000 active to reserve personnel. That figure increases to \$102 billion for 30,000 slots converted.<sup>147</sup> These examples illustrate the vast opportunity for the DoD to restructure intelligently to respond to the changes in warfare, while not requiring significant additional funding. Ultimately, a greater reliance on modern combat airpower could be the foundation of a more effective military posture. It would be less manpower-intensive

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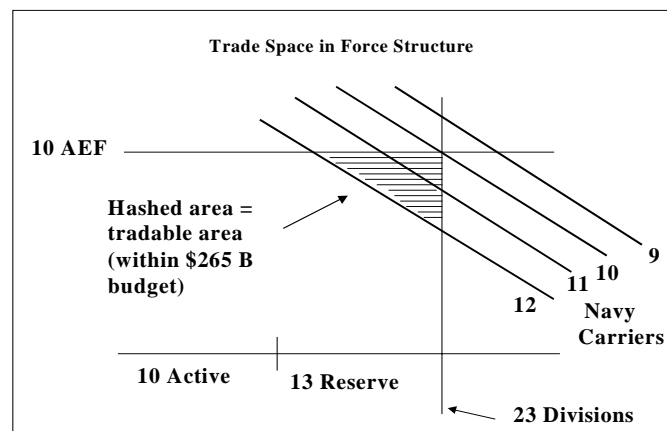
<sup>145</sup> Ibid, (CD-ROM presentation) Col Ron Bath.

<sup>146</sup> *Transforming Defense; National Security in the 21<sup>st</sup> Century*. Report of the National Defense Panel, Dec 1997, iv.

<sup>147</sup> Institute for Defense Analysis. *Comparing the Costs of Active and Reserve Army Forces* (6 November 1997), as cited in “The Gift of Time,” 13. A fuller examination of the active--vice guard/reserve--cost comparison appears in the brief, however the depth of analysis is outside the scope of this paper. The most salient and summary statistics are offered here as conceptual consideration, more than completely conclusive argument. Many issues exist in this debate, not the least of which is the aforementioned pre-deployment times, combat forces (vice combat support) in the reserves, as well as the Army’s reservations about the “Halt” capabilities. Undeniable, however is that current manpower levels exceed even the Army’s own concept of engagement for 2-MTW. See

“thus reducing the operations and support costs that are the key driver in overall military spending.”<sup>148</sup>

Thus, within the DoD budget process exists the need to re-examine the requirement for manpower as technology offers alternative opportunity in structure. In shifting the emphasis from manpower to firepower, not only is the entire military made more effective, but also certain critical aspects of force structure become financially practical to support. The savings in such a structural change might then afford the creation of a more viable strategic lift force, particularly in terms of airlift “tails.” In the following diagram, one visually sees the interplay of military forces given a constant DoD budget:



**Figure 10. “Tradespace”<sup>149</sup>**

This depiction illustrates the three major force structure aspects of the Air Force, the Army and the Navy. As Bath recently indicated, the intersection of the three aspects would be possible given an additional \$20-30 billion dollars to the top-line of the DoD

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also Bernard D. Rostker and Kenneth Watman’s force mixes essay in New Challenges for Defense Planning, Paul K. Davis, ed., Chapter 20.

<sup>148</sup> Barry m. Blechman and Paul N. Nagy, U.S. Military Strategy in the 21<sup>st</sup> Century. (Arlington, VA: IRIS Independent Research, 1997),ii.

budget. This would shift the “12 carrier” line outward to the x and y axes. However, current budget limitations allow the meeting of only two of the three desired structural elements. Thus, assuming no top-line shift, the translation of some active duty ground forces into reserve component units provides an opportunity for the DoD to generate added funding of its own accord.

### **How much Is Enough?**

Regardless of fiscal options, the ultimate question for military planners is what targeted funding is required? That is, to address the airlift needs of the coming decades and, specifically the requirements for the IBCT, one must first decide what the end-inventory of airlift should be. It is axiomatic in military circles that “we’ll never have enough lift.” Indeed, this comment emanates from every military chief with unrivaled regularity.<sup>150</sup> Yet it is certainly conceivable to narrow the chasm between desired airlift availability and the realities of inventory. Ultimately, the challenge is to find an acceptable, plausible medium.

Returning to the earlier proposals for the IBCT movement (Chapter 4) demonstrates the difficulty in determining what that final ‘medium’ should be. The reader will recall that in order to close out the IBCT movement within six days (5.6), a “high risk” option required 35 C-5s and 32 C-17s operating at an untenable 100 per cent reliability rate. The “moderate” option offered a closure at 7.2 days with 37 C-5s and 30 C-17s at reliability rates of 75 and 95 per cent, respectively. At the time of that study, the C-17 inventory stood at 46. Thus, additional tails now being acquired will adjust those figures

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<sup>149</sup> Ron Bath, Brig Gen, ANG. Presentation to the School of Advanced Airpower Studies, January, 2000.

<sup>150</sup> Most recently, Chairman of the Joint Chiefs of Staff made this exact observation in his 2 May address to the Senate Appropriations Committee. *Senate Appropriations Committee Hearing*, C-SPAN Video, 2 May 2000. Also available in transcript form through C-SPAN.

over time. For example, within a year and a half, another 24 C-17s will be in the inventory. For planning purposes, this results in an additional 18 available. (The difference lies in the historical separation between those in maintenance or on higher priority missions versus the actual total number in the inventory. It is never a 1:1 ratio, inventory: available).<sup>151</sup>

So how will these additional tails affect the aforementioned IBCT plan? Primarily, the total number available will have reached a sufficient level to address the desired time-line for deployment (96 hours). However, this would still be based on the expectation of 100 per cent reliability. After additional C-17s appear in the inventory (years 2001-2003), this aspect of the plan changes. That is, as more aircraft are available, the necessary reliability rates for the aircraft involved begins to decrease, ultimately rendering the plan increasingly feasible. Moreover, added inventory adds feasibility by allowing for other missions to continue. As the earlier plan warned, the 32/35 C-17/C-5 mix had an entering argument that nothing else was moved during the IBCT employment—a reality that eliminates a CINC's options and greatly reduces the flexibility of contingency planning.

Yet, the planning math is not linear, as it is impossible to determine (without using extreme numbers of, say, 225 C-17s) how many tails correspond to a given percentage of improved reliability. This is due to the variable of not only how many aircraft are already committed in the system at the time, but also the number that cannot be re-directed due to higher priority missions.<sup>152</sup> It is not unlike the problem with aircraft carrier force

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<sup>151</sup> Telephone interview with Maj Michael Sandquist, 20 April 2000.

<sup>152</sup> This latter comment is more significant than it might appear. Specifically, Presidential support missions receive the highest priority, a designation that did not

structure. In order for the Navy to have a carrier on station, there is a commensurate need for two others—one in re-fit and repair and another in pre-deployment exercises. Much the same way, airlift aircraft require several tails to effect one sortie (this discussion excludes, of course, the equivalent crew ratio requirements for the additional aircraft, a concept outside the scope of this study).

Thus, the aspects of airlift planning form an intricate web of independent and dependent variables. If the inventory increases, required reliability rates can reduce and the assessed “risk” of mission closure decreases. Additionally, if reliability rates increase (the result of re-engining, improved maintenance or the like) then the required inventory need not be as great. Even the amount and capability of destinations (APODs) plays an indirect role, as the greater the capacity of an airfield the less the requirement that reliability rates remain high. That is, if an APOD has room to park a broken aircraft, the inbound sorties may continue unabated. This aspect is particularly crucial for the IBCT, which relies on speedy, complete-unit arrival for immediate combat effectiveness.

A final consideration for ‘how much’ is worth exploration. This study focuses on the IBCT in light of current/projected airlift structure. However, any additions to airlift inventory offer the benefit of aiding larger, MTW-level plans. Thus the CBO and GAO studies offer an indication of the positive effect increased airlift will provide in any

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change even during the Gulf War. Thus, strategic airlift will always be subject to unpredictable reductions of “available” aircraft. For example, the Clinton administration’s seven years have generated airlift support needs in excess of the total for the three previous administrations by a factor of three to four. On average, some 25 percent of airlift assets are designated for presidential support needs. Thus, it is mathematically difficult, if not impossible, to determine how many aircraft would offset these periodic availability reductions. This information is available from the TACC operations summary histories, accessible at the TACC internet cite (“TACC@Scott.AF.mil”).

scenario. Essentially, this illustrates how planning for a SSC directly benefits overall defense planning. Currently, there is an admitted lift shortfall for 2-MTW planning. That gap may prove greater than existing estimates with the forthcoming MRS-05 study. What is undeniable, therefore, is that added airlift will make any national security strategy more viable by endowing the military with added speed and volume for deployments.

Given the options for force structure adjustments and perhaps a modest addition to the top-line of the DoD budget, theoretical room exists for significant airlift increases. Although an exact number of additional C-17 purchases must arrive through inter-service debate, the ultimate figure should be approximately 50. The number is arbitrary, to be sure, but it represents an initial attempt to place a hard number against growing requirements. Specifically, and immediately, this number would allow for an enhanced IBCT to have a realistic chance of being lifted in the 96-hour window called for by the Army Chief of Staff. Furthermore, the commensurate freezing of other airlift would not be required. Moreover, the additional tails would provide airlift feasibility for the follow-on logistical requirements for the IBCT, from resupply to withdrawal. Additionally, with 50 more C-17s the military would be equipped to address the derivative issue of lifting the enhanced assets for the brigade—the 155 mm, et al for division/corps augmentation discussed in Chapter 3—as well as the potential for an additional brigade to deploy to the same or a simultaneous SSC than the initial IBCT. Finally, the added purchases would solidify the aerospace industrial base, which is a perennial need and challenge for the DoD. A viable aerospace industry will make possible future advances in airlift concepts.

The estimated price tag for this acquisition would be less than \$8 billion, and with an accelerated production rate above 15 per year, not only would the IBCT concept become a feasible military option, but also overall MTW challenges would ease.<sup>153</sup> This \$8 billion is not prohibitive. When compared to the savings Bath identified by removing one active division, it is in fact a rather small figure. In addition, not only would such a conversion easily pay for the airlift acquisitions, but also free significant funds for the Army's transformation programs. The critical point of this analysis is that curing airlift shortfalls is not the sole concern of the Air Force. In fact, it is arguably a more pressing concern of the Army, given that the majority of airlift is dedicated to moving or supporting ground forces. The bottom line is that everyone—Army, Air Force and the DoD as a whole—potentially benefits from airlift enhancement. However, the Army must be prepared to accept that the price of an operational IBCT includes greater airlift, which will probably require their significant contribution. Moreover, the payment is most readily found in a reappraisal of Army structure. Thus, though a 'Gift of Time' notion may seem unpalatable to the Army, it may prove an essential step away from 20<sup>th</sup> century warfare concepts and into a new doctrine which includes a smaller, but consequently more relevant and potent force—an objective certainly innate to Gen Shinseki's "vision."

Of course, even added purchases will not remove all of the strategic lift shortfalls, but they will bring the nation's airlift capacity closer to the 'happy medium' mentioned earlier. Most importantly, the United States military as a whole—not, as it appears on the

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<sup>153</sup> David A. Fulghum. "Studies Juggle Airlift Numbers," *Aviation Week and Space Technology*, 6 March 2000, 27. Fulghum cites the expected Boeing price to fall as low as

surface, just the Air Force—benefits. The Army increases its viability and strategic contributions; the Air Force widens its ability to deploy expeditionary wings; and the Navy receives added support for the resupply of its forward locations. Increased airlift does not, of itself, add combat power to the field. However, it does provide an extraordinary conduit for military flexibility that is the cornerstone of American power projection.

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\$149 million per aircraft assuming an end-order of approximately 60-70 aircraft and with production rates not below 12-15 per year.



## Chapter 6

### Concluding Observations

*The American taxpayer should not be asked to buy everything that the Army can think of, in order to respond to every conceivable type of crisis. But it's clear that if we can collectively agree upon a number of plausible scenarios, we can then procure at least a bare minimum of the kinds of equipment that will support that deployment.*

—Lt Gen William G. Pagonis, USA, Ret.

### Introduction

General Pagonis' comment offers a reasonable and logical approach to military developments in a changing world environment. Indeed, as the primary logistician during the Gulf War, Pagonis' experience afforded him an objective look at each service's individual and collective ability to meet deployment and employment requirements. Yet, despite the successes of the Gulf War, the general's comment is cautionary in nature--highlighting the need for collective agreement as a basis for future procurement. However, even the most harmonious review of the strategic environment produces challenge and debate on the most appropriate forces to develop. Thus, as Stephen Rosen observed in *Winning the Next War*, "uncertainties about the enemy and about the costs and benefits of new technologies make it impossible to identify the single

best route to innovation.”<sup>154</sup> In practice, this results in each service advancing often-competing strategies to meet the array of modern conflicts.

### **IBCT—Final Review**

Regardless of the conflict scenario, military leaders and analysts alike acknowledge a deficiency in the deployment speed of current land forces. The Defense Science Board (DSB) recently identified this as “the gap in U.S. response options” that needed to be addressed to enable the United States to “set the conditions of operations from the outset, rather than responding to conditions already set in place by an adversary.”<sup>155</sup> Indeed, as noted in Chapter 2, a rapid response force would offer a regional commander flexibility he currently does not possess. Not only would such a unit offer the possibility of eliminating an enemy *fait accompli*, but it would also allow for seamless transition between types of military engagements. For example, employed in Somalia in 1993, a rapid force may have secured the transition from a humanitarian mission to the subsequent armed, urban intervention. Indeed, a lethal rapid force may have prevented the escalation. The same can be said for the reduction of conflict. That is, after the successful air campaign of Operation Allied Force, a rapid response force would have offered an ideal ground presence for the shift from air strikes to peacekeeping in the Balkans.

The Army’s Interim Brigade Combat Teams apparently fill this “gap” of American response options. “Swift, versatile and lethal” is the advertised moniker of the

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<sup>154</sup> Stephen Peter Rosen. Winning the Next War: Innovation and the Modern Military, (Ithaca, NY: Cornell University Press, 1991), 243.

<sup>155</sup> The Defense Science Board 1999 Summer Study Task Force. “21<sup>st</sup> Century Defense Technology Strategies,” Volume 1, Final Report (Washington, D.C.: Office of the Under Secretary of Defense for Acquisition and Technology, November 1999), 11.

developing brigade. Moreover, the IBCT appears to be on a divergent path from previously stagnant Army developments in lean-and-lethal units—a direction that portends success. Indeed, the Army Combat Studies Institute offered three recommendations in its study of divisional evolution, each of which is evidenced in the IBCT development: First, “have a clear and valid reason” for reorganizing; Second, “give an explicit sense of direction to the testing agency and to the Army at large”; Third, “set specific, concrete goals for testing agencies.”<sup>156</sup> Arguably, General Shinseki’s development of the IBCT accomplishes all of these elements. In fact, objective time-lines, well-defined equipment requirements, and ardent support characterize the IBCT effort to date.

Yet, is this effort to swiftly fill the rapid response gap sufficiently comprehensive? Do the mere identification of a need and the application of new technologies and doctrine render the new force viable? From a logistics standpoint, the answer is currently “no.” Significantly, the same DSB report that stressed the need for rapid response offered more deliberative commentary on logistics: “DoD should no longer treat operations as something supported by logistics—rather, operations and logistics must operate as a single entity in the battlespace and in providing capabilities for use in the battlespace. They are inseparable elements.”<sup>157</sup> As the analysis in Chapters 4 illustrated, the IBCT’s concept for employment evokes questions about the feasibility of critical logistical elements. In particular, from deployment through redeployment the overwhelming reliance is on airlift—as essential to IBCT viability as the soldiers themselves. In short,

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<sup>156</sup> Combat Studies Institute, CSI Report No. 14; “Sixty years of Reorganizing for Combat: A Historical Trend Analysis” (Ft. Leavenworth, KS: CSI, January 2000), 69.

<sup>157</sup> “21<sup>st</sup> Century Defense Technology Strategies,” 22.

without an improved airlift picture than current capabilities paint, the vision of IBCT employment remains more dream than reality.

### **Dollars and Sense**

The ultimate success or failure of the IBCT lies in a combination of money, sound policy, and practical sense. This is not to suggest that DoD projects universally embrace logic and fiscal responsibility. On the contrary, the legacy of impractical or undesirable procurement still lives in budgetary decisions. However, the IBCT offers the most current opportunity for the services to match need with development by securing necessary funding for *all* elements of brigade employment. Indeed, paying for change is as integral to transformation as the innovations themselves.

One of the most difficult budgetary obstacles for the services to overcome is the competition between intra-service transformation and overall defense dollars. As each service strives to effect its own improvements, institutional self-preservation potentially forestalls intelligent investment for overall military acquisitions. That is, budget debates fall to individual service desires at the expense of the most capable force for military strategy. Unfortunately, the reversal of this trend will remain elusive without hard and objective structural decisions within each service.

Perhaps the first step towards improved objectivity lies in an appreciation of the way the services view transformation. Often, there is a substantial difference in the services' approach to the issue, which exacerbates budgetary battles. One recent observer noted "the Air Force has been in a state of continual transformation for a decade," improving weaponry, slashing management layers, and altering structural components at all levels and paying for these changes "out of hide." Meanwhile, the author continues, the Army

does not see change in the same manner, desiring instead “to sustain and modernize its present heavy forces until the new ‘objective force’ is ready.”<sup>158</sup> General Shinseki validated this observation when he suggested that the interim brigades may have to spend “several decades” in the interim configuration while the Army “recapitalizes a portion of the legacy force” (i.e. the M1 series tanks and M2/M3 Bradley fighting vehicles).<sup>159</sup> The result is that while the Air Force endorses the Army transformation, it rejects its development if it comes at the expense of its own programs.

Another step for improved objectivity is a more intelligent assessment of military need. Whereas General Pagonis’ suggested agreement on “plausible scenarios” is one requirement, accordance on weapons systems and service structures is another. Indeed the preeminent challenge for military planners is discerning what type of force will be most effective for a given scenario. Yet service parochialism may prevent this most effective force from developing. Col Ron Bath’s proposal, discussed in Chapter 5, suggests a revision of the Army’s structural composition to employ resources more effectively and to create funding opportunity. His example illustrates the potential for one service’s structural adjustments to result in a heightening of overall military effectiveness.

In another study, Douglas Macgregor offers a comprehensive examination of service structure and weapons platforms. In *Breaking the Phalanx*, Macgregor takes issue with the lack of compromise among the services. For example, he cites the armed forces’ plan

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<sup>158</sup> Jeffery R. Barnett. “Funding Two Armies: Why Paying for the Army’s Transformation Could Spark An Interservice Brawl,” *Armed Forces Journal International*, May 2000, 15.

<sup>159</sup> Sean D. Naylor. “Not Backing Off: Shinseki Going Full Speed Ahead on Plan for Lighter, Quicker Force,” *Army Times*, 20 March 2000, 24.

for new tactical fighters (the F-22, Joint Strike Fighter, and F/A 18 E/F) as a “cost explosion” that challenges defense planners with the problem of preserving U.S. air supremacy in future years “without investing the entire national treasury in manned aircraft.” Macgregor’s query is whether such expenditure truly matches the “primary threat” to American airpower. In fact, he suggests the approach is too narrow.<sup>160</sup> He then examines aircraft carriers and draws the conclusion that while sea-based aviation is critical for the protection of sea lines of communications, “the contribution of carrier-based aviation to a major land campaign is likely to be marginal.” Ultimately, he questions the need for twelve carrier battle groups, in that “maritime superiority in the new strategic environment” does not require American sea forces to be “omnipresent on every ocean.”<sup>161</sup> With these ideas, in addition to a plan for significant restructuring of the Army, Macgregor illustrates objective military compromise—maintaining American advantages in all mediums while rationally matching procurement with future threats.

### **From the Past—the Future**

The above discussion is fundamentally rooted in what strategy the nation chooses to apply in conflicts of the future. Analysis of need and funding for the IBCT and its logistical requirements is directly linked to an analysis of military strategy. The problem is that strategic vision lacks the clarity necessary for ideal military developments. Though threats may be judged in terms of likelihood over time, history is replete with evidence that such estimates often prove erroneous.

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<sup>160</sup> Douglas A. Macgregor. Breaking the Phalanx: A new Design for Landpower in the 21<sup>st</sup> Century (London; Praeger in cooperation with the Center for Strategic and International Studies, 1997), 201. Macgregor argues that a better alternative to meet future threats is a compromise purchase of the new aircraft while sustaining current systems.

Therefore, when strategists look to the future, they must apply with caution the “lessons” of the past. Aspiring not to prepare for the last war, military planners must continue to explore the potential of burgeoning systems and weaponry. So, too, must they avoid assuming successes in past conflicts translate to those of the future. This is perhaps the gravest danger facing today’s military planners. One of the clearest examples of this is the euphoria surrounding airpower in Kosovo. Though debate continues as to what specifically caused Slobodan Milosevic to capitulate, the fact remains that the only combat arm actually employed was airpower, which appropriately deserves the largest credit. However, it is equally true that subsequently ground troops were required (and remain) to ensure the fulfillment of NATO objectives--Admiral Wylie’s “man on the scene with a gun” thus survives. Additionally, there can be no assurance that the next “Kosovo” will not require fighting between ground forces. In fact, the next conflict may prove more reliant on landpower than on airpower.

Regardless of what military strategy worked in the past, the continuing charge of military and civilian authorities alike is the assurance of national interests with the least possible risk. “The perfection of strategy,” Liddell Hart argued, “is to produce a decision without any serious fighting.”<sup>161</sup> This is indeed the objective of deterrence, a strategy made possible by American military strength and commensurate will to employ that power. Yet, as the dissuasion in deterrence has failed in the past, it will undoubtedly do so in other settings. Thus, events of the last decade suggest the need for a new emphasis on another side of deterrence—punishment. As argued by Paul Davis, “severe and

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<sup>161</sup> Ibid, 207.

<sup>162</sup> Strategy, 324. See also the discussion of physical and psychological dislocation on pages 325-329.

immediate political, economic and military punishment of aggressor states” is a better form of deterrent strategy for the new strategic environment.<sup>163</sup> The current National Security Strategy echoes this theme: “We must prepared and *willing to use all appropriate instruments* of power to influence the actions of other states and non-state actors.”<sup>164</sup> This is not to suggest a more aggressive approach to strategic challenges. Political and economic influences must almost always be attempted before the military is employed. However, once that decision is made, America must have on hand the best forces for swift and resolute prosecution.

Though the military and the country can ill afford to acquire every conceivable weapons system or platform, certain aspects of future force structure warrant the most favorable consideration. If the nation is to meet the challenges of a global engagement strategy in an unpredictable environment, it must secure the greatest lethality across the conflict spectrum. Conceptually, the IBCT enhances military capabilities and is thus an effort worthy of further development. Perhaps most importantly, the IBCT offers the opportunity to re-define “jointness” in that the unit’s deployment, sustainment and redeployment require the utmost fidelity to service interaction. The IBCT is thus a commitment to “jointness” we must advance, and once committed, on which we must never renege. Indeed, the brigade could offer a transition from an “Air” to an “American” Expeditionary Force—one with forces for any mission. As this study reveals, however, in its current form the 96-hour brigade is perhaps undeliverable and possibly unsupportable. It remains to be seen whether ‘Boots in the Air’ is embraced as a

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<sup>163</sup> New Challenges for Defense Planning, 220.

<sup>164</sup> President William J. Clinton. “A National Security Strategy For a New Century,” December 1999, 3 (Emphasis added).



military, rather than a service-specific issue. For, without a united service desire, the concept will remain grounded by fiscal storms. Ultimately, until the Army is prepared to contribute substantially to the procurement of additional airlift assets the IBCT, indeed Shinseki's entire vision, will remain simply a dream.

## ***Bibliography***

### **Books**

- Blechman, Barry M. and Paul N. Nagy. *U.S. Military Strategy in the 21<sup>st</sup> Century*. Arlington, VA: IRIS Independent Research, 1997.
- Clausewitz, Carl von. *On War*. Edited and translated by Michael Howard and Peter Paret. Princeton: Princeton University Press, 1976.
- George, Alexander L. *Limits of Coercive Diplomacy*. Second Edition. Boulder, CO: Westview Press, 1994.
- Haass, Richard N. *The Reluctant Sheriff: The United States After the Cold War*. New York: Council on Foreign Relations, 1997.
- \_\_\_\_\_. *Intervention: The use of American Military Force in the Post-Cold War*. Washington, D.C.: Carnegie Endowment for International Peace, 1994.
- Jomini, Baron Antoine Henri de. *The Art of War*. Reprint of 1862 English translation, J.B. Lippencott & Co., Philadelphia. London: Greenhill Books, 1992.
- Keany, Thomas A. and Eliot A.Cohen. *Revolution in Warfare? Air Power in the Persian Gulf*. Annapolis: Naval Institute Press, 1995.
- Liddell Hart, Basil H. *Strategy*. New York: Meridian, Penguin Books, 1991 [Second revised edition].
- Macgregor, Douglas A. *Breaking the Phalanx: A new Design for Landpower in the 21<sup>st</sup> Century*. London: Praeger in cooperation with the Center for Strategic and International Studies, 1997.
- Mark, Eduard. *Aerial Interdiction in Three Wars*. Washington, D.C.: Center for Air Force History, 1994.
- Mearsheimer, John J. *Conventional Deterrence*. Ithaca: Cornell University Press, 1983.
- Davis, Paul K., ed. *New Challenges for Defense Planning: Rethinking How Much is Enough*. Santa Monica, CA: RAND, 1994.
- O'Hanlon, Michael. *Defense Planning for the 1990s*. Washington D.C.: The Brookings Institution, 1996.
- Rosen, Stephen Peter. *Winning the Next War: Innovation and the Modern Military*. Ithaca, NY: Cornell University Press, 1991.
- Schelling, Thomas C. *Arms and Influence*. New Haven: Yale University Press, 1966.
- Snyder, Glenn H. *Deterrence and Defense: Toward a Theory of National Security*. Princeton: Princeton University Press, 1961.
- Van Creveld, Martin. *Supplying War: Logistics from Wallenstein to Patton*. Cambridge: Cambridge University Press, 1977.
- Wylie, J.C., RADM, USN. *Military Strategy: A General Theory of Power Control*. Annapolis: Naval Institute Press, 1967.

## Articles

- Barnett, Jeffery R. "Funding Two Armies: Why Paying for the Army's Transformation Could Spark An Interservice Brawl." *Armed Forces Journal International*, May 2000, 15.
- Eshel, Tamir. "The US Army's New Light Division." *Defence Update International*, no 47, (1984): 14-22.
- Fulghum, David A. "Army Chief Stresses Agility, Firepower." *Aviation Week and Space Technology*, 18 October 1999, 36.
- . "Studies Juggle Airlift Numbers," *Aviation Week and Space Technology*, 6 March 2000, 27.
- Gourley, Scott R. "New Brigade Structure Begins to Emerge," *ARMY* 50, no. 2 (February 2000): 33-34.
- . "Milestones In Army Transformation." *ARMY* 50, no. 3 (March 2000): 27-32.
- "Highlights of AUSA's Annual Meeting," *ARMY* 49, no 12 (Dec 1999): 45-52.
- Jordan, Billy J., Lt Col, USA and Mark J. Reardon, Lt Col, USA. "Restructuring the Division: An Operational and Organizational Approach." *Military Review* 78, no. 3 (May-June 1998): 17-24.
- Killebrew, Robert B. Col, USA, [Ret.] "The Army of the 21<sup>st</sup> Century." *ARMY* 50, no. 1 (January 2000): 8-13.
- "Light Armor: Necessary Addition to the Light Infantry Division." *Armed Forces Journal International*, November, 1984, 20.
- Naylor, Sean D. "Not Backing Off: Shinseki Going Full Speed Ahead on Plan for Lighter, Quicker Force." *Army Times*, 20 March 2000.
- . "Radical Changes: Gen Shinseki Unveils his 21<sup>st</sup>-Century Plans." *Army Times* 25 Oct 99.
- "New Brigades Will Offer 'Shoot and Move' Capability." *ArmyLINK News*, Mar 2000, n.p. On-Line. Internet, 14 March 2000. Available from <http://www.dtic.mil/armylink/news/Mar2000/a20000303lewisbct.html>.
- Newell, Mark, Maj, USA. "4<sup>th</sup> ID Pioneers New Division Design." *ARMOR* 102, no 6, (Nov-Dec 1998): 49-50.
- Phelps, Angela R., Maj, USA. "Strategic Mobility." *Army Logistician*, May-June 1996, 26-28.
- "Ralston Applauds Army's Efforts to Transform Force." *AUSA News* 23, no 3 (Jan 2000).
- Record, Jeffrey. "Operation Allied Force: Yet Another Wake-Up Call for the Army?" *Parameters*, (Winter 1999-2000): 15-23.
- Reimer, Dennis J. Gen, USA. "The Army After Next: Revolutionary Transformation." *Strategic Review*, (Spring 1999): 41-44.
- Scales, Robert H., Jr., Maj Gen, USA. "A Sword With Two Edges: Maneuver in 21<sup>st</sup> Century Warfare." *Strategic Review*, (Spring 1999): 45-54.
- . "From Korea to Kosovo: America's Army Learns to Fight Limited Wars in the Age of Precision Strikes." *Armed Forces Journal International*, Dec 1999, 36-41.
- Sherman, Jason. "Quick Time: The Army's New Strike Force Concept Aims to Redefine Rapid Reaction." *Armed Forces Journal International*, May 1999, 16-17.
- . "The Vision Thing: The Army Leadership Has Promised a New Vision. But Will It be Able to Generate More Resources?" *Armed Forces Journal International*, Oct 1999, 42-45.
- "Shinseki Forsees a Faster, More Powerful Ground Force." *AUSA News* 23, no 2 (Dec 1999).

Starry, Donn A. Gen, USA. "To Change an Army." *Military Review* 63, no 3 (March 1983):20-27.

Stearman, William L. "Medium-Weight Brigades: Army's Part of Joint Force." *Army Times*, 6 Dec 99.

Sullivan, Gordon R. Gen, USA. "A Vision for the Future." *Military Review* (May-Jun 1995): 5-12.

"The Light Division: Light Enough to Get There-Mobile Enough to Survive-Lethal Enough to Win-We Need it Now." *Armed Forces Journal International*, October 1983, 15.

Yarger, Harry R. Col, USA, [Ret.]. "Land Power: Looking Toward the Future through the Green Lens." *Strategic Review*, (Winter 1999): 22-30.

Zimm, Alan D. "Desert Storm, Kosovo, and "Doctrinal Schizophrenia." *Strategic Review*, (Winter 2000): 32-39.

### **Documents, Records and Reports**

Aspin, Les. *Report on the Bottom-Up Review*. Washington: Department of Defense, Oct 1993.

Bath, Col Ronald, ANG and Dr. Rebecca Grant. "Airpower and the Total Force: The Gift of Time." Arlington, VA: IRIS Independent Research, 1998. Additional and expanded text available in CD-ROM

Bossert, Maj Philip A., USAF. "Strategic Airlift Inefficiencies from Desert Shield to Vigilant Warrior." Ft. Leavenworth, Kansas: Command and General Staff College (unpublished thesis), 1995.

Clinton, William J., President. "A National Security Strategy For a New Century," Washington, D.C.: The White House, December 1999.

Cohen, Eliot A., Gulf Survey Staff, Director. *Gulf War Air Power Study, Volume III, "Logistics and Support."* Department of the Air Force, Washington, D.C., 1993.

*Conduct of the Persian Gulf War*. Final Report to Congress, vol. II, April 1992.

Combat Studies Institute, CSI Report No. 14. "Sixty years of Reorganizing for Combat: A Historical Trend Analysis," Ft. Leavenworth, KS: CSI, January 2000.

Congressional Budget Office (CBO). *Moving U.S. Forces: Options for Strategic Mobility*, February 1997.

Defense Science Board, 1999 Summer Study Task Force. "21<sup>st</sup> Century Defense Technology Strategies," vol. 1, Final Report, Washington, D.C.: Office of the Under Secretary of Defense for Acquisition and Technology, November 1999.

Government Accounting Office (GAO). *Military Airlift: Options Exist for Meeting the Requirements While Acquiring Fewer C-17s*. Report to the Honorable Elizabeth Furse, House of Representatives, Washington, D.C., February 1997.

Gritton, Eugene C, et al. *Ground Forces for a Rapidly Employable Joint Task Force*. Santa Monica, CA: RAND, 2000.

Harvey, John. "Conventional Deterrence and National Security." Canberra: RAAF Air Power Studies Centre, 1997.

Institute for Defense Analysis (IDA). *Comparing the Costs of Active and Reserve Army Forces*, 6 November 1997.

Joint Publication (JP) 3-0. *Doctrine for Joint Operations*, May 1999.

Joint Publication (JP) 3-33. *Joint Force Capabilities*, 13 Oct 99.

Joint Publication (JP) 4-01.1. *JTTP for Airlift Support for Joint Operations*, 20 July 96.

National Defense Panel. "Transforming Defense; National Security in the 21<sup>st</sup> Century," December 1997.

Shalikashvili, Gen John M., USA, Chairman of the Joint Chiefs of Staff. *Joint Vision 2010*. Washington, D. C.: Office of the Chairman, July 1996.

US Air Force, Air Mobility Command (AMC). *Command Data Book*, November 1999.

US Air Force, Air Mobility Command (AMC), Tanker Airlift Control Center (TACC). *Airfield Suitability Report*, February 2000.

US Air Force, Air Mobility Command, Plans Division (AMC/XPXPL). *Air Mobility Strategic Plan 2000*.

US Air Forces Europe (USAFE), Directorate of Studies and Analysis. "Air War Over Serbia Fact Sheet" (AWOS), 31 Jan 2000.

US Air Mobility Command (AMC), Tanker Airlift Control Center (TACC). "Airlift Operations Summaries." On-Line. Available from <http://www.tacc.safb.af.mil>.

US Army Training and Doctrine Command (TRADOC). "Knowledge and Speed." Army After Next Project, July 1997.

US Army Training and Doctrine Command (TRADOC). "Operational Requirements Document for a Family of Medium Armored Vehicles (MAV) ACAT I," Draft Version, 21 Dec 99.

US Army Training and Doctrine Command (TRADOC). "The Full Spectrum Brigade." Organizational and Operational Concept, 1 Nov 1999.

US Army Field Manual (FM) 100-5. *Army Operations*, 1993.

US Department of Defense. *Kosovo/Operation Allied Force After-Action Report*. Report to Congress, 31 Jan 2000.

US Joint Chiefs of Staff. *National Military Strategy of the United States of America*. "Shape, Respond, Prepare Now: A Military Strategy for a New Era, Washington, D.C., 1997.

US Joint Forces Command (JFCOM). "A Concept Framework for RDO." J-9, White Paper, 22 October 1999.

US Senate. *Statement by General Eric K. Shinseki, Chief of Staff, United States Army, before the Committee on Armed Services*. 106<sup>th</sup> Cong., 1<sup>st</sup> sess., 26 October 1999. [Record version].

## **Presentations**

Bath, Brig Gen Ron, ANG. Presentation to the School of Advanced Airpower Studies, January, 2000.

Robertson, General Charles, CINC, USTRANSCOM. "The Future of Air Mobility." Presentation to the Maxwell AFB Airlift Tanker Association, 22 March 2000.

Robertson, General Charles, CINC, USTRANSCOM. Presentation to the Air Force Association Conference, December, 1999.

US Air Mobility Command (AMC), Operations Division (XOP). "Brigade Combat Team Airlift Feasibility Analysis," briefing, 24 January 2000.

US Army Transformation Axis Team. "Transforming the World's Best Army into a Full Spectrum Force." Briefing to Four-Star Conference: Initial BCT Charter Operational and Organizational Concept, 10-11 January 2000.

US Senate. *Hearing before the Senate Appropriations Committee*. C-Span television presentation, 2 May 2000,

## **Interviews**

Multiple telephone interviews with Maj Michael Sandquist, Air Mobility Command Tanker Airlift Control Center (TACC/XOP), between 10 February and 20 April 2000.

Telephone interview with Col Robert Owen, AMC/XOP, 28 March 2000.

Telephone interviews with Mr. Dave Merrill, AMC/XPY, 21-30 March 2000.

Telephone interview with Mr. Steve Dexter, JFCOM logistics division, 24 Mar 2000.